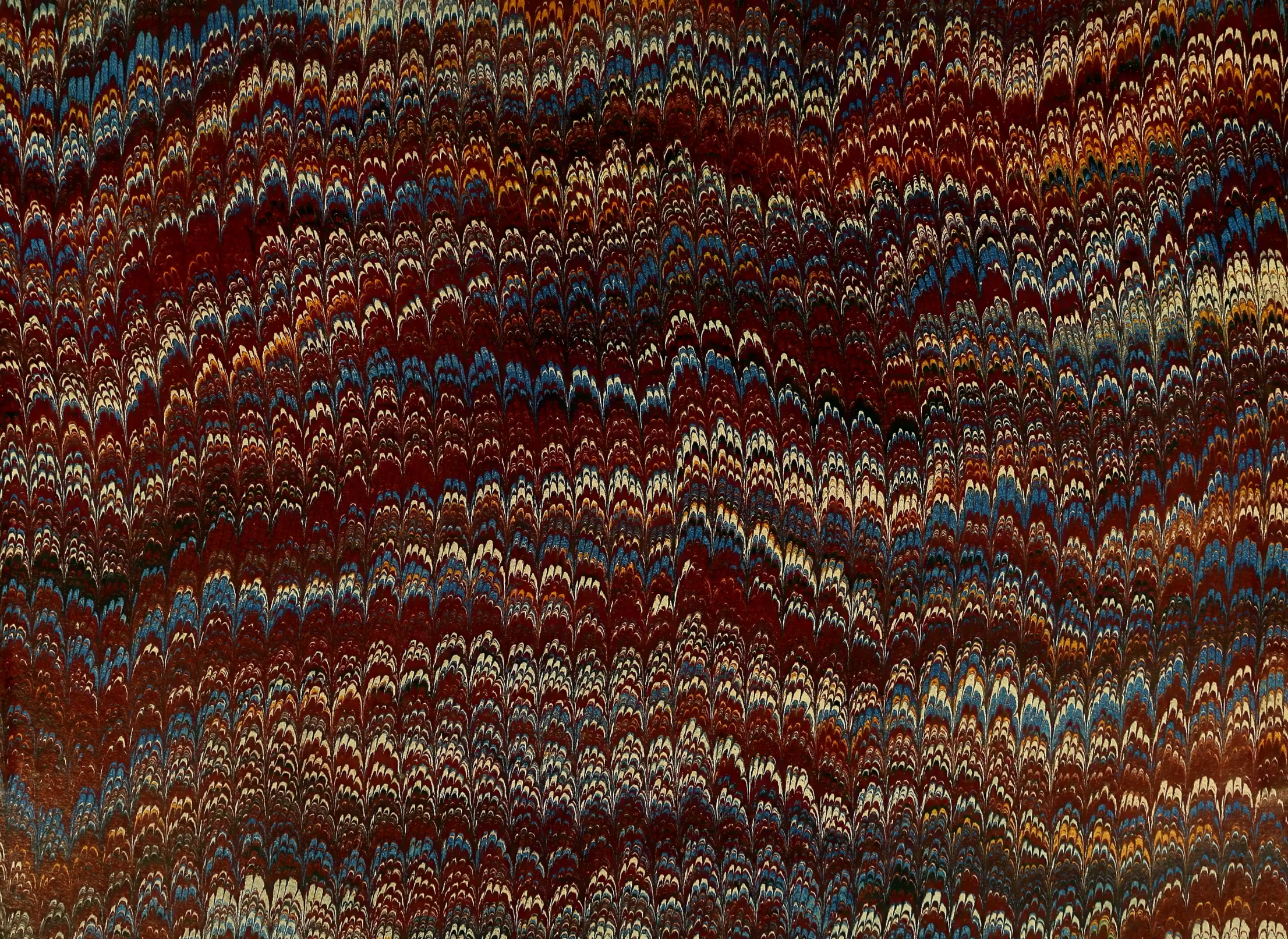
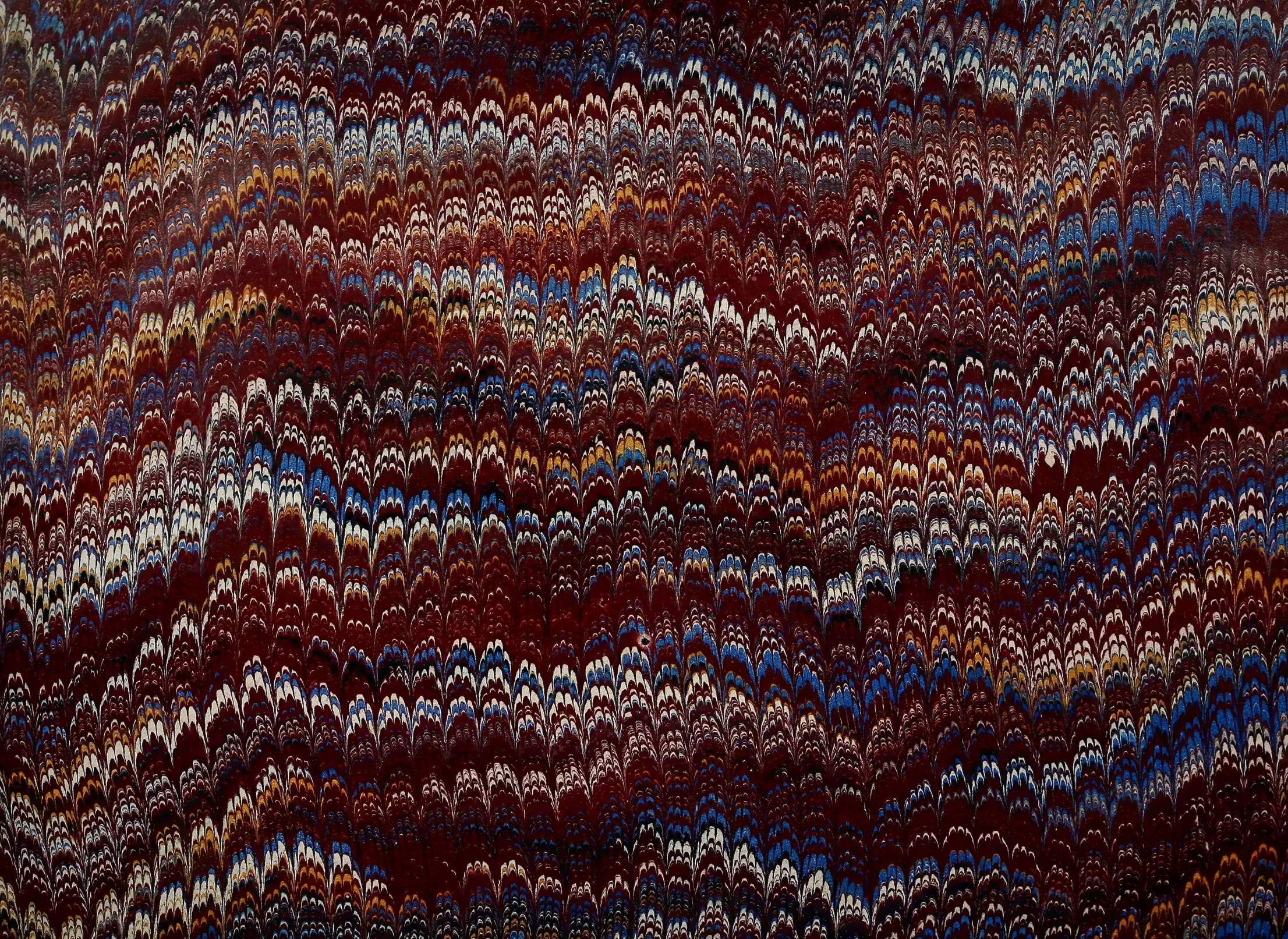




A HISTORY

OF

THE BIRDS OF EUROPE,

INCLUDING ALL THE SPECIES INHABITING THE

WESTERN PALÆARCTIC REGION.

BY

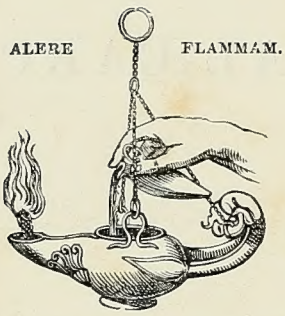
H. E. DRESSER, F.L.S., F.Z.S., ETC.

VOLUME V.

LONDON:
PUBLISHED BY THE AUTHOR,
6 TENTERDEN STREET, HANOVER SQUARE, W.

1871–1881.

ALERE FLAMMAM.



PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

A HISTORY OF THE BIRDS OF EUROPE



BY

HENRY E. DRESSER, F.L.S., F.Z.S., ETC.

VOLUME V.

CONTAINING:—

PICIDÆ. ALCEDINIDÆ. CORACIIDÆ. MEROPIDÆ.
UPUPIDÆ. CUCULIDÆ. STRIGIDÆ. BUBONIDÆ.
VULTURIDÆ. FALCONIDÆ (to Elanus).

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Order III. PICI.

Family PICIDÆ.

Subfamily *PICINÆ*.

Genus DRYOCOPUS.

Picus apud Linnæus, Syst. Nat. i. p. 173 (1766).
Dryocopus, Boie, Isis, 1826, p. 977.
Dendrocopus apud C. L. Brehm, Isis, 1828, p. 1274.
Carbonarius apud Kaup, Natürl. Syst. p. 131 (1829).
Dryotomus apud Swainson, Faun. Bor.-Am. Aves, p. 301 (1831).
Dryopicos apud Malherbe, Mém. Acad. Metz, 1849, p. 320.
Dryopicus apud Malherbe, Monogr. Pic. i. p. 31 (1861).

It is with some hesitation that I have subdivided the Woodpeckers into four genera, and have used the generic titles *Dryocopus*, *Picus*, *Picoides*, and *Gecinus*; but after mature consideration I have decided on taking this course. In the first place, it is no easy matter to decide what the type of the genus *Picus* is. Professor Newton says he has no doubt that *Dryocopus martius* should be looked on as the type; but in this view I cannot concur. The older authors had no idea whatever of types; and all that one can do is to infer that if they had lived in these times they would have constituted certain species types of the genera they made. It appears therefore to me to be mere conjecture to say that because Linnæus ranged the Great Black Woodpecker foremost amongst the Picidæ, or because Brisson did the same with the Green Woodpecker, these authors meant those species to be the types of the genus. Under all the circumstances it seems to me best to accept, as many authors have done, *Picus major* as the type of the genus *Picus*, and to place the Great Black Woodpecker in the genus *Dryocopus*.

This species, which is the sole representative of the genus, is a shy, rather wild bird, and affects the denser forests—as a rule, those far away from human habitations. It climbs with ease about the trunks of the trees, like the common Woodpeckers, and obtains its food, which consists of insects of various kinds, chiefly by boring into the decayed portions of trees. Its flight is heavy, though swift and undulating; and its note is clear and loud. It excavates its own nest-hole in the trunk of a tree, and deposits several pure-white glossy eggs. It has the bill long, stout, conical, pentagonal, laterally bevelled at the tip so as to present an abrupt wedge-like termination; nostrils oblong, concealed by reversed bristly feathers; wings long and wide, the first quill short, the second shorter than the eighth and about equal to the ninth; tail long, wedge-shaped, the shafts very strong, the terminal portion stiff and deflected; feet very short, first toe very short, the second moderate in length and united at the base to the third, fourth long and directed backwards, claws very large, curved, acute; tongue vermiform, terminated by a narrow, flat, horny point, which is ciliated with short reversed bristles, and extensile, as is the case with all the Picinæ.



DRYOCOPUS MARTIUS.

XVIII

DRYOCOPUS MARTIUS.

(GREAT BLACK WOODPECKER.)

Picus martius, Linn. Syst. Nat. i. p. 173 (1766).
Dryocopus martius, Boie, Isis, 1826, p. 977.
Dendrocopus martius, Brehm, Isis, 1828, p. 1274.
Carbonarius martius, Kaup, Natürl. Syst. p. 131 (1829).
Dendrocopus pinetorum, Brehm, Vög. Deutschl. p. 185, t. 13. fig. 3 (1831).
Dendrocopus martius, Brehm, Vög. Deutschl. p. 185 (1831).
Dryotomus martius, Sw. Faun. Bor.-Am. Aves, p. 301 (1831).
Dryopicos martius, Malh. Mém. Acad. Nation. Metz, 1849, p. 320.
Dryopicus martius, Malh. Monogr. Picid. i. p. 31, t. 10. figs. 5, 6, 7 (1861).

Great Black Woodpecker, English; *Pic noir*, French; *Schwarzspecht*, German; *de zwarte Specht*, Dutch; *Spilkråka*, or *Svart-Hackspett*, Swedish; *Svartspet*, Norwegian; *Sortspet*, Danish; *Dyatell Jelna*, Russian; *Picchio nero*, Italian.

♂ nitide ater: remigibus brunnescentibus: capite summo cristato læte coccineo: rostro lactescente, cæruleo tincto, maxilla ad apicem nigricante: pedibus saturate plumbeis: iride sulphurea.

♀ mari similis, sed pileo nigro, macula magna occipitali coccinea.

Male. General colour glossy black, slightly tinged with brown on the fore part of the under surface; quills and tail blackish brown; crown of the head crimson, narrowing into an occipital crest on the nape; bill bluish white, blackish towards the point; feet dark grey; iris light yellow. Total length 18 inches, culm. 2·6, wing 9·0, tail 7·0, tarsus 1·3.

Female. Similar to the male, but somewhat duller in plumage, and inclining to brown. Always to be distinguished by the crimson on the head being confined to a patch on the occiput, and not extending on to the forehead. Total length 18 inches, culm. 2·3, wing 9·2, tail 7·2, tarsus 1·3.

The young birds are similar to the adults, excepting that the bill is not so strong, the black not so pure, and the red on the crown of the male not so largely developed, nor so bright as in the old birds (*von Wright*).

The present species is highly characteristic of the Palæarctic Region, and extends right across its northern portion, from Scandinavia to Japan. Towards the south of Europe it becomes scarcer, but is met with in most of the large forests. Its supposed occurrence in England rests on the most unsatisfactory basis, as will be seen from an analysis of the evidence given in detail by Mr. Gurney below; we ourselves do not believe in the authenticity of one of the instances.

Degland and Gerbe give scarcely any information about the distribution of the bird in France. All they say is that it is "found in the mountainous parts of Switzerland, France, and Sicily, accidentally in Liguria."

As regards its occurrence in Southern France, Jaubert and Barthélemy de la Pommeraye

state that it is of very rare occurrence in Provence and Dauphiné; and Baron J. W. von Müller says it "inhabits the Sevennes and Alps. Very rarely stragglers are said to be killed near Montpellier."

Bailly states:—"it is very common during all the year in Savoy, in the large conifer forests of Maurienne, throughout all Tarantaise, Faucigny, particularly in the wooded valleys of Samoëns, Sixt, Chamounix, Passy, &c. It is also met with in the more lonely woods of the valley of Éparres, Grande-Chartreuse, and St.-Hugon. I have also killed it in the forest of Joigny, near Chambéry, in October 1849, and again in the same locality in 1850; but I may remark that it neither breeds here nor in the conifer woods of Ælliat and Planet, above Saint-Cassin, where it is from time to time to be observed during its autumn and winter wanderings."

In Tuscany, Savi records it as "not uncommon in some of the mountains of Savoy and the Tyrol."

It is included by Bettoni among the birds which breed in Lombardy, where, however, it is stated to be rare and migratory; more often found in the Alps.

Malherbe says it is "rare near Messina, but still it is found all the year in the forests of Sicily, particularly in the centre of the island.

It is found throughout the forests of Switzerland, whence Sir W. Jardine has received it from Anderigg; and in the Canton of Freyburg it is not very rare, according to Dr. L. Brehm. Godron, in his 'Zoology of Lorraine,' considers it rare there, more common in the Vosges, "found in the woods round Nancy, and at Bitche, according to Malherbe." Von Homeyer says, "One or two pairs nest yearly near Seeligenstadt-on-the-Main, in Hesse Darmstadt; and it is said to have been common formerly in the forest near Frankfort."

"In Belgium," writes De Selys-Longchamps, "I have not observed it, but know of a bird killed in the large forest of Hertogenwald, near Verviers, on the Prussian frontier."

Schlegel says that in Holland it has been twice seen at Tivello, and has been shot near Groesbeck. Kjærbölling considers it only an occasional visitant in Northern Denmark.

Mr. R. Collett states that "near Christiania it is not rare, but is found throughout the year in most of our large conifer woods."

Nilsson says it is very rare in Southern Sweden, but commoner as one gets northward, occurring even within the limits of the polar circle, and as high up on the fells as the pine-forests extend. Herr Ludwig Holtz has recorded it from Gottland, where it is not rare; and in Lapland the late Mr. Wheelwright found it common. He writes:—

"The Great Black Woodpecker was quite as common up here (Quickjock) as in the middle of Sweden. We took the first nest on the 5th of May, which is about two weeks later than we find them in the Wermland forests. As far as I can remark, five is the full number of eggs, which vary much in size, sometimes being very little larger than those of the Green Woodpecker, which bird I never saw in Lapland."

Dresser found it plentiful in Sweden.

Blasius says that it is a resident, and breeds at Drömlinge, near Brunswick; and indeed throughout all Germany it appears to be found in places suited to its habits and mode of living. The following remarks as to its occurrence in Styria were published by the late Mr. Seidensacher:—

"It is found here, and is a resident, but is rare and widely diffused. It nests on the Leisberg and in the Stadtwald, and generally lays four eggs. If these are taken away time after time, the bird still continues to lay in the plundered nest-hole, and, in spite of being continually molested, uses it (contrary to the habits of other Woodpeckers) several successive years. At Neustadt, in Krain, eighteen eggs were taken from the same female from time to time out of two nest-holes, which it made use of at the same time by turns; and even after that it bored another one the same year and hatched three young ones."

Dr. Finsch considers it rare in Bulgaria; and Messrs. Elwes and Buckley, in their paper on the birds of Turkey, write:—

"Found in the forests of Bulgaria, but nowhere numerous. We shot one in rather open country near Rassova, where only a few stunted oaks were found in the valleys. There can be no doubt that the pine-forests of the Balkan are a favourite resort of this bird; but we never saw or heard it in Macedonia."

In his paper on the birds of the Ionian Islands, Lord Lilford writes:—

"I saw two specimens of this Woodpecker at Santa Maura, which I was assured had been killed on the Black Mountain of Cephalonia. I caught a glimpse of a bird which I believe to have been one of this species, in a wood near the mouth of the river Drin, in December 1857."

Lindermayer says it is found in some of the higher mountain-ranges in Greece; and Von der Mühle, in the forests of Roumelia.

Mr. Strickland, in his list of birds observed in Asia Minor, says:—"I saw a specimen of this bird in the possession of Mr. Zohrab, at Broussa. It was shot in the pine-forests of Mount Olympus."

Mr. Robson writes to us as follows:—

"This species is not uncommon in Turkey in Europe and Asia Minor, inhabiting the dense old forests. Their principal haunts in the latter country are near Iniboli, Castamboul, Ismidt, Mount Olympus, &c.; they are also shot near Parryville, in Europe. Some of the specimens are of a deep black raven-colour; others are tinged with a rusty brown, due probably to age. They feed much on the large larvæ of beetles, also grubs and beetles found in old trees. The skins of Woodpeckers are firmly attached to the flesh, especially on the lower back and legs. This peculiarity is most strongly exhibited in the present species, which, while resting on their hinder parts cleaving the bark with their strong head and bill in search of food, have a powerful leverage in their extremities. The sound of their bills can be heard at a great distance."

Professor von Nordmann states that it is "rare in the southern provinces of the Black Sea. It inhabits Volhynia and Podolia, and from time to time occurs in the north of Bessarabia. In 1836 I saw it on the mountains of Ghouriel."

Lehmann also obtained it on his journey to Bokhara; and Dybowski and Parrex say that it is a common bird in Dauria. Radde writes as follows:—"Observed everywhere in the forests of South Siberia. At from 4000 to 5000 feet above the sea it becomes rare, and is not found in the region of the boundary of tree-vegetation, though *P. major* and *P. minor* are found here. It is a resident."

Dr. Middendorff likewise observes:—"I lost sight of it on the Jenesei, north of 62° north lat. It was common, however, in the Stanowoi mountains, and abundant at all seasons, also on the southern slope of the boundary mountains in Mantschuria."

The following are Dr. von Schrenk's notes:—

"Not less commonly than Middendorff found this bird in the Stanowoi mountains and on their southern slope in Mantschuria, did I find it in the Amur country, and particularly to the north of the lower part of the Amur river, where dense conifer forests extend to the banks of the river and the sea-coast. Particularly in winter the stillness of these forests is broken by its tapping, both on the Amur river, the Amur Liman, and the coast of the Bay of Castries, and other places. I have also heard it in the forests of Saghalien, the upper and lower portions of the Tymy river, at Tschlowo, Miwwach, &c. In spite of the dense undisturbed wilderness, it is there a shy, suspicious bird. It seldom visits the edge of the forest and the habitations of the natives on the river; and directly I saw it there, it was off again. Thus I only once procured one, on the 3rd (15th) of December, at the mouth of the Amur; it was a female, not differing from the European bird. Comparatively early in the year, on the 2nd (14th) of March, I heard the male, on the Amur, making the drumming sound which it makes shortly before the pairing-time. It was in the forenoon of a bright mild day in March, near the village of Ssamahagdu, near the mouth of the Chelasso, where, in a forest of pine and leaf trees, I had for a long time followed a pair. Now a harsh cry, now a rattling, drumming noise sounded through the forest. Following the sound, I saw the birds several times, and could distinguish the male on the top of the highest trees, aspens and birches, making the drumming sound by repeated quick hard blows with his bill. Higher up the Amur, where deciduous trees only are found, I did not see it; and it probably keeps to the conifer growth in the interior of the country."

The Great Black Woodpecker likewise occurs in Japan. Captain Blakiston, writing in 'The Ibis' on the ornithology of Northern Japan, states:—

"In the woods were numbers of migratory Thrushes (*Turdus fuscatus*), the Great Black Woodpecker (*Dryocopus martius*), other Black and White Woodpeckers, and a small species (*Picus kisuki*) sporting about in company with two or three kinds of Tits and the Nuthatch named at the head of this paragraph" (*Sitta roseilia*); and further on he says:—"My specimen of the Great Black Woodpecker of Europe was obtained from a native birdcatcher; but I several times saw the bird wild in the woods near Hakodadi."

Near Gefle, in Sweden, and in various parts of Finland, Dresser found this species not uncommon, and had opportunities of observing it almost daily. It is a shy bird, and only by using great caution is it possible to approach within gunshot. When they observe that they are followed they are careful to keep a tree between them and their pursuer; and when one gets to within fifty or sixty yards they fly off, uttering their loud call, *kree*, *kree*, *kree*, but seldom go far. As may be imagined from their size and powerful build, they tap the trees with good force; so that they can be heard at great distances, particularly in still weather, when they are engaged in attacking any large dead bough. Their note, *kree ah*, *kree ah*, or *kree*, *kree*, *kree*, the latter quickly repeated, may often be heard, more particularly before rainy weather. The flight is swift though heavy, and is a succession of bow-shaped dips, like that of our Green Woodpecker. They are seldom seen to fly any great distance, seldom further than across a valley from one hillside to another. Their food consists, we believe, entirely of insects, although they are said by some authors to devour berries and seeds at times. Dresser, at least, who has examined the contents of the stomachs of many of these birds, never found them to contain any thing else

but insect-remains. They appear to be particularly fond of ants, and in the winter often make holes in the large ant-hills which are to be seen everywhere in the forests of Scandinavia, and feast on the inhabitants. They never attack any but a rotten tree, or one which the insects have begun to destroy, and are thus most useful and harmless birds.

The nest-hole is generally bored in a large fir or aspen tree deep in the forests; but Dresser found the nest once in a huge aspen close to a much-frequented spring, again in a large pine tree overhanging a forest-road, and a third time in an old aspen not above a gun-shot from a house; but in the last-named instance the birds were never disturbed or shot at, and had therefore become comparatively fearless. The nest-hole is generally deep, and is formed by the bird itself; the eggs, generally four in number, are pure white, very glossy, and measure from $1\frac{5}{20}$ inch in length by 1 inch in width to $1\frac{8}{20}$ by $1\frac{1}{20}$. In shape, judging from a series of eggs now before us out of Dresser's collection, collected in Germany, Finland, and Sweden, they are generally rather pointed towards the smaller end, although one is equally pointed towards each end, and another is pure oval.

One of the best descriptions of the nesting of this bird in Scandinavia is from the pen of Mr. W. H. Hudleston; and we therefore give it in full.

"In the districts south of the Great Lakes, especially towards the Baltic, the forests, though not so extensive as in the central and northern parts of the peninsula, still cover vast areas of the level surfaces, the remainder being largely occupied by lakes and morasses. Cultivation has not made much progress here; and as the sale of timber is most profitable to the proprietors, few but the woodcutter ever invade these regions. In the vicinity of settlements, or wherever there is facility of carriage, the trees are of second growth, and stand in blocks of various ages, divided by lanes often of great length and regularity. There are, however, districts little touched by the axe, which are more exclusively delivered over to the birds of the air and the beasts of the field; here the Wolf and the Glutton, not to mention Foxes in abundance, still dwell in snug lairs amongst the huge granite boulders that are matted over with a covering of heather, cranberry, and similar plants—quiet, gloomy spots, seldom reached by the sun, where the fir and the pine, the beech and black poplar, of all ages and sizes, are mingled in rank confusion. The mouldering remnants of past generations of trees lie prostrate on the ground, or lean for support against their more vigorous neighbours, thus forming a tangled mass by no means easy for man to penetrate, though much beloved by many of the Woodpeckers. *Picus viridis* is not to be found in such a locality; the old oaks in the open parts are more suited to his taste, where he may be seen in company with the Roller and the Hoopoe, the Jackdaw and Starling, the Creeper and Nuthatch. But for *P. martius* and *P. major* such a place as I have attempted to describe is admirably adapted, both on account of the abundance of soft and decaying timber, and likewise because there is little fear of molestation from mankind, in most countries the worst enemies of birds. No other of the five remaining Scandinavian Woodpeckers fell under my observation in the south of Sweden, though in a country so well suited for the Picidæ it is to be expected that most of them occur, with the exception, perhaps, of *P. tridactylus*, which is a more northern species.

"Towards the latter end of May 1856, I happened to be staying with a Dane, the overlooker of a large forest belonging to Count L——, having been introduced to him by my companion,

who was likewise a Dane. When he heard that I had come all the way from England to find the 'Bo' of the Spilkråka (*P. martius*), he sent for his chief woodman to inquire what chance there was of getting one. The woodman said that he had frequently seen birds throughout the spring, and had in former years even noticed their 'Bo,' but that it was generally so high that nobody could get at it, that this year a pair of birds were known to frequent the edge of a clearing about four miles distant, and that, if we would accompany him early next morning, we might possibly discover the object of our search. This was cheering intelligence, and caused us to make an early start. Our way lay chiefly through a monotonous wood of spruce firs, very uninteresting in appearance, and apparently destitute of any species of bird—so much so that my heart misgave me as to the success of our undertaking. But on crossing the clearing (a square of about 1000 yards), a Spilkråka was seen to slip quietly away from the upper part of a tall spruce to which he had been clinging, and to fly towards the far corner of the square, where he uttered a slight warning cry and disappeared. It took us a very short time to cross the remaining space in the direction he had gone; and it became speedily manifest that one object of our journey was obtained. We had found the 'Bo' without any difficulty, on the skirts of the clearing, where the ground was depressed somewhat below the general level; and not far from the edge of a marsh there stood the remains of an ancient birch some 30 feet in height, and slightly overhanging towards the opening. Near the top on our side was a fresh hole; but what was more to the purpose, from within that hole there peered the unmistakable head and bill of *P. martius*, gazing at the party without evincing much alarm. My first care was to prevent my companion from blowing to pieces, at the trifling distance of ten yards, that head so temptingly displayed before the muzzle of his gun. This point gained, a tap from the woodman's axe caused the bird to retreat, when we commenced operations, pending which the old ones remained in the vicinity. Sometimes they would come within gunshot, and then, as if alarmed at their own audacity, swing round to the other side of the tree to which they might be clinging, poking so much of the head forwards as to enable them to see what was going on. In this position they would beat a rapid and angry tattoo upon the trees, and occasionally utter, in addition to their ordinary cry, one of the most peculiar notes I ever heard from any European bird, and which more resembles the sharp and momentary ring of a shrill-toned bell than any other sound with which I am acquainted. We heard this note subsequently whilst operating upon another nest; but it appears not to be uttered except under great excitement, and then, perhaps, only by the female. The entrance-hole was within two feet of the top of the tree, which was easily ascended, the bark being very coarse. On examining it I found the edges much rougher than those of holes made by *P. viridis*, the sides sloping slightly upwards towards the interior. In shape it was elliptical, the horizontal being perhaps a fourth larger than the perpendicular diameter. The roof of the cavity was quite honeycombed by the strokes of the bird's bill; and this peculiarity was noticed in the two nests subsequently discovered. The depth of the cavity below the entrance-hole was rather less than two feet, which was quite sufficient to prevent my ascertaining what lay at the bottom. An alarm that the old stump was giving way with my weight brought me very speedily to the ground. The woodman meanwhile cut down a young spruce and had it reared up against the ancient birch to prevent the anticipated catastrophe. He then went up himself and laid open the nest (being able to do so with his hands alone) so far as to introduce

the whole of his arm into the cavity. To my intense delight he proclaimed that there were eggs at the bottom. I immediately ascended, in order to see them *in situ*; but that was impossible without further enlarging the hole, for which my fingers were not strong enough. The party below in the interval had rigged up a long pole with a cap attached to the end of it, in which I deposited the eggs, and then slipped down in time to receive them once more into my hands. They were five in number, one much fresher than the others, which were partially incubated, though on blowing them it was found that no feathers had been formed. In their smooth ivory texture these eggs very much resemble the well-known eggs of *Picus viridis*. The fresher one was of a glossy white, and sufficiently transparent to show the colour of the yelk; the others were slightly wood-stained, and presented a duller appearance, owing to their having been incubated. When blown, this difference is removed; but the wood-stains of course remain, and somewhat detract from their beauty. In shape they resemble eggs of *P. viridis*, and are not so much larger as I expected would be the case.

"The hole was of this year's making. However, the bird is not in the habit of always making a fresh hole, as I afterwards found out. Of the three inhabited nests discovered, two were new and one old. Our woodman had a theory that the Spilkråka occupies its 'Bo' during two successive years if not disturbed; and he thought that this identical pair were a young couple that had just set up for themselves. Chips, some of them half an inch in length, lay plentifully at the foot of the tree, giving the ground the appearance of the floor of a carpenter's workshop. I was engaged in securing some of these as specimens of the Spilkråka's workmanship, when a loud trumpeting sound was heard in the distance, announcing that a fresh excitement was in store for us. This was caused by a pair of Cranes, who presently came within sight, flying low across the opening, and right down upon our position. All our party crouched, and my companion was in great hopes of bagging the brace, which he would have done but for a slight noise that caused the birds to swerve towards the left, where they disappeared in the direction of the marsh. We were following the line they had taken, but had not gone a hundred yards from the birch-tree, when the male Black Woodpecker, in his anxiety to see what had happened, flew upon it, and, after making two or three spirals round the trunk, slipped into the hole. Unluckily for him he came out again, and clung to the broken edge, in which position my companion, to my intense annoyance, fired at and brought him down. However, as there was no hope for it, I took the bird and had it skinned. We continued to follow the line of the Cranes until we arrived at the edge of the marsh; but nobody was willing to accompany me further, and I thought it unadvisable to proceed alone, as the very first plunge took me up to the waist.

"We afterwards searched another part of the country in a different direction, where the forest was of a more varied character, one especial feature being the existence of occasional groups of ancient oaks, which stand somewhat after the fashion of ornamental timber in a park. They have been left when the rest of the wood was cleared away, and are apparently doomed to be the last of their race, as no young trees of the same species are growing up to succeed them. These oak-groves are full of Starlings, Jackdaws, and Stockdoves; besides which the Green Woodpecker, Roller, Creeper, and Nuthatch were also noticed. The Hårfogel (*Upupa epops*) and the Görktyta (*Yunx torquilla*) also occur, and are said to breed in these places regularly. Some of the oak-groves are remarkably pretty spots, always refreshing to the eye wearied with

the sombre depths of the forest, as it rests upon the green turf beneath the picturesque old trees smiling in comparative sunshine, and generally studded with the wood-anemone amongst other flowers of the northern spring. However, there was no chance of finding the Spilkråka here; so I placed myself under the guidance of another woodman, who eventually brought me to a group of firs evidently frequented by a pair of *P. martius*; for we heard their now well-known cry, though unable to perceive them. My guide showed me a hole that had been inhabited the two preceding years; but, as it was some fifty feet up an immensely tall fir, I felt rather happy that the evident absence of the birds relieved me from the necessity of laying siege to that particular nest. Several of the trees were perforated; but we could not find out the right one.

"On the following day the search for *Picus martius* was renewed, in a portion of the forest some seven miles to the north-west of the house, and where the 'Bo' of the Glada (*Milvus regalis*) was also said to occur. We proceeded for several miles along one of the straight rides which traverse this forest, through what appeared in the distance to be a complete wall of pines. From a hut by the way a woodman was picked up, who proved a valuable recruit, and under whose guidance we turned off the ride to the left, following a slightly traced path which conducted to a clearing full of old oaks, similar to those previously mentioned.

"The ground in many places hereabouts is very rough, and encumbered with masses of decayed and decaying timber, above which shoot very tall firs much mixed with black poplar. We found in the remains of an old birch the nest of *Parus cristatus*, my attention being first drawn to the tree by the uneasiness of the birds. On examining it more narrowly a hole was apparent, about the size of a penny, newly made, and within reach from the ground. I cut it open easily with a pocket-knife, and found young ones almost ready for flying; the crest was very strongly developed. After being fully inspected, they were restored to the tree, and the hole made up. Further on in this direction was a marsh with much underwood, said to contain Cranes, though none were seen or heard. The chief feature, however, hereabout is the Hackspett (*Picus major*), which is numerous, and has a great partiality for the black poplar, here so abundant. The number of old holes bored in these trees is surprising. It is very possible also that *Picus medius* may have its share in this work, though I could not say with certainty that an example of that species came under our notice. The woodman, however, told me that he knew two or three kinds of the Hackspett; but unquestionably *Picus major* is the most numerous here. Two inhabited nests were discovered; in one of these the cries of the young were plainly heard, so that we were spared the trouble of cutting it open.

"Suddenly the attention of the party was arrested by the unmistakable cry of a Spilkråka. We continued to pursue the direction of the welcome sound until we arrived at a part of the forest not very far from the reported Crane-marsh, containing several tall poplars mixed with pine and fir. There both the birds were seen; but as there were several old holes, though none of this year's making, we scattered about in different directions, and then stopped to watch. After waiting for about an hour, one of the birds, which had evidently slipped in unobserved since our first sighting them, was seen to come out of a hole, by myself and two others, all from different points. We sprang up simultaneously, the alarm was given, and in a very short time the entire party was standing under the tree—a straight poplar, not far short of a hundred feet in height, and destitute of any thing that could fairly be called a branch, its upper parts being in

a broken and decayed condition. There were two old holes of the Spilkråka, both below the inhabited one, which was about thirty-five feet from the ground, and not of this year's making. As the whole of the tree was perfectly smooth and very thick, there appeared no reasonable chance of climbing up, so as to use the axe with any effect; indeed the woodman shook his head at the very idea, and we knew if he could not manage it, no one else could. The overlooker was perfectly willing to allow the tree to be felled, as black poplar here is of no value; but there was nothing against which it could be felled, and to bring such a mass at once to the ground would have been utter destruction to every thing in the nest. Nor was there any hope of getting a rope attached to the upper branches, which were quite untrustworthy. Altogether the prospect was very black indeed, and there seemed every probability that the second nest of *P. martius* would prove too difficult of access for us. A council of war was held, when it was agreed that nothing could be done that day, and that the matter should stand over for the present; but the woodman said he should return early in the morning and build a ladder on the spot sufficiently high to reach the 'Bo.' It was to be ready next day at noon, when all the party were to reassemble and assist in hoisting it.

"Comforted by this assurance, we returned to a neighbouring forest settlement. Just at dusk a man living near came and reported a 'Bo' of the Spilkråka and another of the Hackspelt. To the latter I proceeded immediately, but on cutting it open found three young ones half fledged.

"Next morning an early start was made for the third Spilkråka's 'Bo' reported the previous evening. It was situated in a much thicker part of the wood than either of the others; indeed I am inclined to think, judging also from old nests, that this bird prefers to breed in the neighbourhood of some opening, whether caused by nature or the axe. The hole in this case was situated about halfway (twenty feet perhaps) up a dead fir. Being somewhat impatient on this occasion, I requested the man to fell the tree, which he did in the course of ten minutes, causing it fall with wonderful accuracy against one of its neighbours which he had selected; but the weight was too great, and both came to the ground with an awful crash. On going up to the hole young ones were heard, but could not be reached without our further enlarging it. The cavity of this nest was an inch or two over two feet from the honeycombed roof to the base on which the young had rested; these, together with much of the sawdust, had been thrown forward, but singularly enough, though stunned, they were not killed by the concussion. Had there been eggs, they must, I think, have been broken to pieces. There was a considerable quantity of sawdust, which had the appearance of sand, the particles being much finer than those of the nest in the birch tree. Three birds were all the nest contained; they seemed to have been hatched about four days. As there was no hope now for them, they were put into spirits, and afterwards given with several others to my friend Mr. John Wolley, to whose suggestions the results of this expedition were chiefly due. The old birds did not exhibit the usual amount of anxiety; but just before we left the female suddenly appeared and clung to a tree within fifteen yards of our heads, where she remained for a few moments, and then swung round to the other side, from which position she kept peeping at us, as is their wont, but without uttering the peculiar cry.

"There now remained the second nest, the taking of which was still doubtful, as I was

determined on no account to have the tree felled, after the results in the last instance. Noon found us all assembled, and the ladder quite ready. It was an ingenious affair, constructed of two young fir trees, joined at intervals of four feet by cross bars passing through the flanks, beyond which they projected some distance. There was neither nail nor peg in it, and the whole had been made on the spot by the woodman and his comrade with axe and borer. The length of it was about forty feet. Nothing now remained but to rear it. This was done, after the thin end of the ladder had been placed against the tree, by means of two notched poles, which were fitted, one into either flank of the ladder, as it rested. The flanks were then gradually raised, each by two men, whilst the others pushed against the heavy end; so that as the first four increased the elevation of the ladder, the second party kept diminishing the distance between its base and the base of the tree upon which the weight was principally thrown, until the ladder itself stood at an angle of about 80° from the ground with the top round still under the hole. The woodman then went up, and announced, to my dismay, that there were young ones in this nest also. After satisfying myself, by inspection, of the truth of his statement, I directed him to enlarge the hole sufficiently for us to see what they were like, which he proceeded to do, after first securing the top of the ladder by means of a rope. Before this was done, the ascent was very ticklish work. The axe revealed to us four young ones, half-grown and very vicious, being well able and willing to use their bills upon intruding fingers. One was taken, to secure a specimen of the bird in this stage, which was not much after all our trouble; the other three were left poking their ugly heads out of the window so unceremoniously made in their habitation. The rope was then untied, the ladder thrown down and broken, and the storming party prepared to move off to different parts of the forest, according to their several destinations. The old ones meanwhile had never ceased to ring their alarm note, and angrily tap the neighbouring trees; but before we lost sight of the well-known spot, I was pleased to see the mother boldly re-enter her violated abode to comfort her astonished but undaunted offspring, who suffered, I am inclined to believe, no further inconvenience from our visit beyond a slight increase of air and light into their apartment.

"Some days afterwards I returned to the very place in company with Mr. Wolley, who was desirous of visiting this wonderful Woodpecker locality, where the tall poplars have been bored on all sides during so many succeeding years. The broken ladder lay at the foot of the tree, which itself bore marks of the recent axe; but no young ones looked out upon the intruder, no old ones rang out the alarm-note from amongst the neighbouring trees. The family had gone, and the forest was silent."

Respecting this bird's habits in Norway, Mr. Robert Collett, of Christiania, writes us that "When on the wing it utters a rattling loud cry, something like *krrr*, *krrr*, *krrr*, &c.; and when it settles on a tree it cries *kli-ȳh*, *kli-ȳh*, always using the same note when on the wing, and the same when sitting. In the autumn and winter it lives chiefly on ants (*Formica rufa*), digging far into the ant-hills after those that are torpid deep inside the hill. During the summer it hunts on the rotten and insect-eaten trees and stumps for larvæ of *Rhagium indigator*, and devours quantities of *Bostrichus octodentatus*. On the fell-sides it does not occur above the tree growth. If its eggs are taken, and one or two left, it continues to lay fresh ones; and I know of fourteen eggs having thus been deposited in the same nest, the last of these only

measuring 26 millims. × 20 millims. The first eggs are generally laid about the 28th of April.

"Like other Woodpeckers it wanders to some distance in the autumn, and is often seen in groves near habitations outside the town. It is almost always found in pairs, in the autumn, however, in families; but one never sees several close together. They are difficult to approach within gunshot, and this is more particularly the case as regards the male."

The following account has been published by Dr. Krüper:—

"In the large forests of Pomerania it is common; near Ueckermünde, where the pines are rare, I often found it getting its food at ant-hills by the roadside. It nests both in foliage and conifer woods, boring its nest-hole sometimes high and sometimes lower, from twenty to sixty feet, and in such trees as are rotten inside. The entrance is not round, like those of other Woodpeckers, and is generally so large that a man can put his arm in. Hitherto I have never had to enlarge the hole as my friend Mr. Hausmann has had to do several times in these parts. The hole is below very roomy, and sometimes about a foot deep, but often twice as deep. In Pomerania this Woodpecker commences to bore its nest late in March or early in April; but, according to circumstances, the nesting is later. Thus I discovered on the 22nd April, 1852, two pairs so busy in forming their nest, that I could walk under the tree and hear the dull knocking inside. They lay in the middle of April; and I have found eggs on the 13th, 17th, 21st, and 25th April; sometimes, however, later, as, for instance, in 1852 and 1853, when the breeding-time of all birds was so irregular. On the 8th May I found four fresh eggs; and another pair near had not laid, whereas in another locality I found on the following day half-grown young.

"According to the locality where this Woodpecker dwells it is during the breeding-season either shy or bold. Thus the female from which I took the eggs on the 21st of April, 1848, left the nest directly, and did not venture near again; on the other hand, on the 21st of April, 1851, a female would not leave the nest, though we knocked on the trunk and threw up stones, until the tree was climbed. After we had taken the four eggs, the bird flew in again, and would not be driven out by knocking.

"Forsaken Woodpeckers' nests serve as nesting-places during the summer to the Stock Dove, the Roller; later on as retreats for the Squirrels, or sleeping-places for the Green and Spotted Woodpeckers, as well as other birds. Thus, as Dr. Gloger most truly remarks about this Woodpecker, it does carpenter's work not only for itself, but for many other animals."

According to Naumann it subsists not only on all sorts of larvæ found under the bark of trees, but is also partial to ants, feeding on the large race, *Formica herculeana*, as also on the smaller ones, *F. fusca* and *F. rufa*, and their larvæ. It is particularly fond of larvæ of *Sirex gigas*, *Cerambyx*, *Lamia*, &c., beetles, and larvæ of *Bostrichus*, *Hylesinus*, *Spondylis*, &c., as also the larvæ of many insects which are found in wood, as, for instance, *Cossus ligniperda*, of which several have been found in its stomach at one time. It is said to feed on bees, and to do harm to the wild-bee swarms of the Bashkirs, near the Ufa River, necessitating steps to prevent its ravages amongst them. Bechstein is said to have found conifer-seeds in its stomach, and states that it feeds on nuts and berries; but this Naumann doubts, as he failed to discover this in his investigations.

Much uncertainty has always shrouded the record of this bird's capture in England, and

many of the supposed instances of its occurrence have been disproved. We therefore applied to our friend Mr. John Henry Gurney, jun., to whom we are indebted for much laborious work undertaken with a view to a careful analysis of the claims of rare birds to be included in the British list, and we feel sure that the accompanying exhaustive account of the Great Black Woodpecker in Great Britain will be received with the greatest interest:—

"Although Sir R. Sibbald claims *Picus martius* as a bird of Scotland in his 'Historia Animalium in Scotia' (1684), bk. iii. p. 14, there can be no doubt that he uses the term '*Picus martius*' for Woodpeckers generally, as is suggested by Mr. Buxton in the 'Zoologist' (p. 9730); and I may add that Sir Thos. Brown (1682) uses it in the same sense.

"The Great Black Woodpecker was added to the catalogue of British Birds in the following vague terms by Latham:—'I have heard mention made of this species having been once seen in the southern parts of this kingdom; and Mr. Tunstall tells me that he has been informed, by a skilful ornithologist, of its being sometimes seen in Devonshire.'—*Suppl. to Gen. Synopsis*, p. 104.

"Latham probably took his authority for this latter statement from *the Tunstall MS.*, which Headlam discovered, and Fox printed (The Newcastle Museum, p. 60).

"Montagu says he had heard that one was shot on a willow tree in Battersea fields (Dict. Suppl.). This is commented upon (Zool. p. 9730); but the writer does not notice the fact of Battersea being even then far too populous a neighbourhood for such a forest-loving bird as *Picus martius*.

"Dr. Richard Pulteney, in his Catalogue of Birds in Dorsetshire, appended to Hutchins's History, says (p. 6):—

"'*P. martius.* Body black; cap scarlet. Linn. 173. [I omit the synonyms.] Black Woodpecker. Shot in the nursery-garden at Blandford, also at Whitchurch, and other places, in Dorset.'

"It has been urged, from the description, that these could only have been veritable examples of *Picus martius* (Field, January 29, 1870); but the description is only the Linnean prefix translated from the 'Systema Natura.' (*Cf.* Pulteney's preface.)

"One is said to have been shot in Lancashire by Lord Stanley (Mont. Suppl.); but the statement is shown to be incorrect (Collingwood, 'Historical Fauna of Lancashire and Cheshire,' p. 16, and Zool. pp. 9626–27).

"The Rev. C. A. Bury states, in 'The Zoologist' for 1845 (p. 915), that the Ven. Archdeacon Hill shot one many years ago in his garden at Shanklin parsonage. He informs me (*in literis*) that it was hung up in a verandah, and carried off, as was supposed, by a cat; so that he never saw it himself, though he had no doubt about its being a veritable *Picus martius*, from the description of Archdeacon Hill, who, however, was no naturalist and had no name for it.

"At p. 49 of 'The Field Naturalist' (footnote), Mr. Blyth states that he was informed of one having been shot, about 1830, somewhere in the northern vicinity of London.

"A female, in the late Mr. Newton's collection, is stated in Rowe's 'Perambulation of Dartmoor' (App.) to have been killed near Crediton; and Mr. Rodd states, on the authority of Mr. J. G. Newton (Zool. p. 9874), that Mr. Rowe's informant was Dr. Moore; but there is no mention of it in either of his lists.

"Its introduction into Norfolk catalogues rests on the following passage in Yarrell's 'Brit.

Birds,' ii. p. 129:—'A few years since a communication was made to the Zoological Society of London that two examples of the Great Black Woodpecker had been at that time killed in a small wood near Scole Inn, in Norfolk.'

"Mr. Stevenson (B. of Norfolk, i. p. 291) has identified these birds with some shot by Mr. F. Drake, and from the information he has obtained, has good grounds for concluding that they were not the Great Black, but the Greater Spotted species.

"Although much search was made, neither Mr. Stevenson nor Dr. Sclater could find the passage referred to by Yarrell; but I accidentally lighted on it in looking through Eyton's 'Catalogue of British Birds,' p. 28, footnote, where it is stated that a notice was read before the Linnean Society, November 17th, 1835 (—37), of a *Picus martius* shot near Billingwood, which place is close to Scole, on the borders of Norfolk and Suffolk.

"Yarrell (*l. c.*) mentions a pair frequently seen near Christchurch: possibly his informant may have been the Earl of Malmesbury. He also mentions two supposed occurrences in Yorkshire.

"Hewitson notes a pair seen at Yarm by Mr. T. Meynell (Hew. i. p. 238).

"Yarrell says (*l. c.*) it is recorded to have been killed in Lincolnshire, probably referring to the Mag. of Nat. Hist. ix. p. 599.

"Macgillivray had a pair, supposed to have been shot near Nottingham (B. B. iii. p. 79).

"Mr. Clark-Kennedy alludes to one seen by a Mr. Walter at Windsor, and one by himself at Ditton Park (Birds of Berks and Bucks, p. 178); and Mr. Harting gives an account of one seen in Caen Wood by Mr. Spenser (Birds of Middlesex, p. 112).

"It is included in Hastings's 'Natural History of Worcestershire' (p. 66).

"About March 3rd, 1846, a Woodpecker (believed to have been the *Picus martius*) was shot by an under-gardener of the name of Kitchen, at Ripley Castle, near Ripon. It was seen in the flesh by Mr. J. Jaques, a friend of Mr. J. C. Garth, who briefly recorded its occurrence in the 'Zoologist' (p. 1298), and to whom I am indebted for these particulars. He never himself saw the bird, which was stuffed (as he informs me) by the late Mr. John Stubbs, of Ripon, for the head gardener, whose name was Elliot. It has now been totally lost sight of. In my opinion it was probably a case of mistaken identity; but a good authority appears to think otherwise (*cf.* Ibis, 1866, p. 411).

"In the 'Naturalist' for 1851 (p. 20), Mr. J. M'Intosh says he has seen Great Black Woodpeckers at Claremont, in Surrey, and Charborough, in Dorsetshire, and that at the former place they made their nest, three years, in a hole in a brick wall, and plastered up the aperture.

"That this should be credited was not to be expected (see Zool. p. 3088); and the observer, though alluding again to it (Naturalist, p. 132), brings no fresh facts forward to confirm his extraordinary statement.

"It is included in the Somersetshire fauna by the late Mr. Baker (Som. Archæological Proc. p. 144), whose grandson believes that the specimen alluded to was shot at Street, near Glastonbury. Mr. C. Smith, the best authority on the birds of that county, shows no inclination to admit it.

"At p. 3279 of 'The Zoologist,' Mr. Newton records one seen, but not obtained, near Saffron Walden.

"Mr. Crotch includes it in his Fauna of Shetland (Zool. p. 7341), on the authority of a supposed specimen killed at Belmont, in Unst; but the Greater Spotted Woodpecker, which is known to have occasionally occurred in considerable numbers, is omitted.

"One was seen in the New Forest by Mr. Farren (Zool. p. 8091; Wise's New Forest, p. 272, and App.), and eggs taken. The measurements of these have not been published, but they are stated to have been almost as large as Snipes' eggs. Whatever be the value of this record, the comment on it at p. 8136 of 'The Zoologist' was most unnecessary.

"One reported to have been killed at Binstead (Zool. s. s. p. 1515) was really bought in Leadenhall Market (Zool. p. 1562)."

Our descriptions and figures are taken from an adult pair of birds in our own collection,—the male being from Sweden, shot by Mr. Meves in March 1870, the female from Switzerland, killed in February 1866.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, b. Sweden (*Meves*). *c.* Near Wyburg, Finland (*H. E. Dresser*). *d.* Switzerland (*Schlüter*).

E Mus. Lord Lilford.

a. Sweden (*Wheelwright*).

E Mus. Salvin and Godman.

a, b. Southern Norway (*F. G.*). *c, d.* Switzerland.

E Mus. H. B. Tristram.

a. Sweden (*Wheelwright*).

Genus PICUS.

Picus, Linnæus, Syst. Nat. i. p. 173 (1766).
Dendrocopus apud Koch, Baier. Zool. i. p. 72 (1816).
Dryobates apud Boie, Isis, 1828, p. 325.
Dendrodromas apud Kaup, Natürl. Syst. p. 142 (1829).
Leuconotopicus apud Malherbe, Rev. Zool. 1845, p. 375.
Campethera apud Gray, Gen. of B. iii. App. p. 21 (1849).
Pipripicus apud Bonaparte, Consp. Vol. Zyg. p. 8 (1854).
Piculus apud Brehm, Naumannia, 1855, p. 274.
Dendrocoptes, apud Cabanis, Mus. Hein. v. p. 41 (1863).
Xylocopus apud Cabanis, Mus. Hein. v. p. 51 (1863).

The group of Woodpeckers of which *Picus major* is the representative has a wide range, being met with in the Palæarctic, Nearctic, Ethiopian, and Oriental Regions, eight species being found in the Western Palæarctic Region. They frequent woods and groves, feeding on insects of various kinds, which they obtain chiefly by digging into the bark and the decayed portions of trees. They climb actively about the trunks of trees, holding on by their strong feet and supporting themselves by their stiff tails. Their flight is tolerably strong and undulating; but they do not appear to traverse great distances, usually only flying from grove to grove or tree to tree. Their note is a loud sharp *gich*, which is uttered now and then as they fly; but, as a rule, most of the species are not very noisy birds, except as regards the hammering sound they make. They excavate their nest by boring into a tree, and deposit on the chips in the bottom of the cavity thus formed their eggs, which are pure white, and glossy in texture.

Picus major (which, it appears to me, should be looked on as the type of the genus) has the bill stout, rather long, conical, pentagonal, straight, laterally bevelled at the tip so as to present an abrupt wedge-like termination; nostrils oblong, concealed by reversed bristly feathers; wings rather long, broad, the first quill very short, the second shorter than the seventh, the fourth and fifth longest; tail moderately long, wedge-shaped, the feathers stiff, the central ones deflected at the tip; feet short, the first toe very short, the fourth long, both directed backwards, the second moderately long and united at the base to the third; claws strong, curved, acute, laterally grooved.



PICUS MAJOR

X.XVI

PICUS MAJOR.

(GREAT SPOTTED WOODPECKER.)

Picus major, Linn. Syst. Nat. i. p. 176 (1766).
Dendrocopus major, Koch, Syst. d. Baier. Zool. p. 72 (1816).
Dryobates major, Boie, Isis, 1828, p. 325.
Picus cissa, Pall. Zoogr. Rosso-Asiat. i. p. 412 (1831).
Picus pinetorum, Brehm, Vög. Deutschl. p. 187 (1831).
Picus pityopicus, id. tom. cit. p. 188, Taf. xiii. fig. 4 (1831).
Picus frondium, id. tom. cit. p. 189.
Picus montanus, id. tom. cit. p. 189.
Picus pipra, Macgill. Brit. B. iii. p. 80 (1840).
Picus alpestris, Reich. Handb. *Picinæ*, p. 365 ( ).
Picus mesospilus, id. tom. cit. p. 365.
Picus brevirostris, id. tom. cit. p. 365.
Picus baskiriensis, "Verreaux" [ubi?], Bonap. Consp. Vol. Zyg. p. 9 (1854).

Great Spotted Woodpecker, *Pied Woodpecker*, *Wood-pie*, English; *Pic épeiche*, French; *Pico rosso maggiore*, Italian; *Pica-pau malhado*, Portuguese; *grosser Buntspecht*, German; *de Bonte Specht*, Dutch; *Större Hackspett*, Swedish; *Stor Flagspet*, Norwegian; *Flagspet*, Danish; *Isompi Tikka*, Finnish; *Dyatell obiknovennoï*, Russian.

Figuræ notabiles.

Gould, B. of Eur. iii. pl. 239; Yarr. Brit. B. ii. p. 142 (1843); Naum. Vög. Deutschl. v. Taf. 134; Kjærb. Orn. Dan. Afb. 14. fig. 5; Schl. Vog. Nederl. pls. 50, 51; Reich. Handb. *Picinæ*, Taf. dcxxxiii. figs. 4210–12; Malh. Monogr. Pic. iii. pl. xvi. figs. 5, 6, 7, 8, 9; Gould, B. of Gr. Br. pt. iii.; Bettoni, Ucc. nidif. Lomb. tav. 16.

♂ *ad.* niger: occipite coccineo: fronte fulvescente: loris et faciei lateribus usque ad latera colli, albis, his ad apicem cristæ occipitalis strigâ nigrâ transnotatis: vittâ malari nigrâ usque ad latera colli extensâ: scapularibus albis: tectricibus alarum nigris, dorso concoloribus, majoribus dorsalibus scapularibus proximis albis: remigibus nigris, extus et intus maculis albis irregulariter notatis et transfasciatis: caudâ nigrâ, rectricibus tribus exterioribus sordidè albis nigro irregulariter notatis: subtus sordidè albus: pectoris lateribus utrinque nigris, torquem interruptam pectoralem formantibus: abdomine imo centrali et crisso toto coccineis: subalaribus albis: rostro saturatè cyanescenti-plumbeo, mandibulâ pallidiore: pedibus viridescenti-plumbeis: iride pallidè rubrâ.

♀ *ad.* mari omninò similis, sed plagâ crissali minùs pulchrâ et cristâ occipitali absente.

♂ *juv.* similis adultis, sed pileo antico coccineo.

Adult Male. Above glossy black, with a strongly marked crimson occipital crest; forehead fulvous; lores, cheeks, feathers round the eye, ear-coverts and sides of the neck creamy white; a broad black

malar stripe produced backwards on to the sides of the neck, and joined just at the extremity of the occiput with the black of the head, so as to cut off the white of the ear-coverts from the white of the neck; scapulars white; wing-coverts black like the back, the innermost greater coverts nearest the back white like the scapulars, forming a continuous white patch with the latter; quills black, chequered on both webs with small white marks; the first long primary almost unspotted, the second containing five and the third six of these white spots; tail black, the three outermost feathers irregularly barred and marked with white, the latter colour extending over the apical half of the two outer feathers; under surface of the body more or less creamy white, the lower part of the abdomen, vent, and under tail-coverts crimson; on each side of the breast a broad crescent-like line of black feathers extending down from each side of the neck; under wing-coverts white, a little chequered with black; bill dark blue-grey; feet greenish grey; iris pale reddish. Total length 9·3 inches, culmen 1·1, wing 5·8, tail 4·0, tarsus 0·95.

Adult Female. Exactly similar to the adult male, but not so bright about the vent, and at once to be distinguished by the absence of the crimson occipital crest. Total length 8·9 inches, culmen 1·1, wing 5·65, tail 3·6, tarsus 0·95.

Young Male. Similar to the adult birds as regards the character of the markings, but differing from both the old male and female in having the entire head crimson from the hinder part of the frontal band to the occiput.

Nestlings. Even in the nest the sexes seem to differ; for some birds, presumably females, have the crimson extending only to the middle of the crown, while others, which we suppose to be males, have this crimson extending right as far as the occiput. The feathers over and round the eye are all white, and a line of black feathers separates the crimson crown from the eye, forming, as it were, a double eyebrow of white and then black. The sides of the face are for the most part white, the malar streak being only very indistinctly indicated, while the black line which, in the adult, passes behind the ear and joins the last-named stripe to the black of the crown, is, in the very young nestling, quite obsolete; but there is evidence that it is developed before the bird leaves the nest, and in full-grown young birds is sufficiently plain, though of course not so strongly and broadly marked as in the adult. Although the scapulars are quite white, the greater wing-coverts nearest to them are varied with black, and the quills are tipped conspicuously with white; the young bird, when full-grown, still has these white tips to the wing; but when quite adult the extremities of the quills are black, and the nearest white spot is some distance from the apex of the quill, being further removed in the primaries than in the secondaries. The amount of white on the outer tail-feathers seems to be greater in proportion in the very young birds. The pectoral half-collar is very feebly developed, and the crimson of the vent is only slightly pronounced. The specimens described were taken from the nest in June; and by the end of September or beginning of October the young birds of the year are in full moult, putting on their mature livery. At the time that the red feathers on the crown are shed and black ones assumed, the black feathers of the occiput give way to the red ones which are to form the occipital crest. As a rule the young specimens killed in England have no black mixed with the white feathers of the scapulars, although there are generally some black variations to be seen on the innermost white greater coverts, which are generally hidden by the scapulars; but a specimen shot at Greatham, in the county of Durham, on the 21st of October, 1863, and now in Canon Tristram's collection, has slight remains of black markings on the scapulars as well as on the greater wing-coverts. A specimen sent to us by Mr. A. Benzon, of Copenhagen, and killed in the neighbourhood of that town on the 13th of September 1870, has these parts very much mixed with black, while on the breast are the remains of small black stripes. The most extraordinary specimen of a Pied Woodpecker that we have yet seen is one lent to us by Mr. J. H.

Gurney, jun., from Shetland, where it was obtained during the large migrations which have twice visited the island, and of which mention is made below. We must state that we are at present unable to identify this specimen, the chief characteristics of which are the grey on the nape and wing-coverts, and the stripes on the breast—characters which seem to separate it from *Picus major*. It is too large for *P. medius*, and cannot be *P. leuconotus*, which, so far as we are able to discover, has the lower back white at all ages. In appending a full description of Mr. Gurney's specimen, we beg leave to ask the assistance of all our ornithological friends in identifying the species to which it belongs.

Young Male shot at Halligarth, Shetland, in September 1861, *by Dr. Saxby.* Forehead buff; crown of the head crimson, bordered with greyish black above each eye; nape clear grey; orbital region and ear-coverts, as well as the sides of the neck, dull white; malar streak greyish black, extending right down the sides of the neck and joined to the crown by a narrow line of black just behind the ear-coverts; back blackish, becoming much more grey on the rump and upper tail-coverts; scapulars white, irregularly barred with greyish black; wing-coverts clear grey, the centres of the feathers blackish, the shafts being especially plainly marked, the innermost greater coverts white much varied with black, especially at the base of the feathers; quills blackish, becoming browner towards the tip of the feather, the white markings on the outer web forming three distinct white bars across the wing, but more irregular on the primaries, where no distinct bands are to be seen, the extremities of the primaries tipped with white; tail blackish, the three outermost feathers white towards the tip, this colour being least developed on the third rectrix, more on the second and on the outermost, occupying more than the apical half of the feather, all these white portions irregularly crossed with blackish bars; under surface of the body dirty white, with very distinct streaks of black down the sides of the body; abdomen and vent pale vermilion; the pectoral half-collar of black very feebly developed; under wing-coverts nearly entirely white, some of the lower ones barred with blackish. Total length 9·7 inches, culmen 1·05, wing 5·6, tail 3·9, tarsus 0·95.

The present species and its allies are spread over the entire Palæarctic Region; but whether all the birds which have been differentiated are really good species, and if so what are their respective ranges, will be a matter for future observers to decide, and it will be impossible rightly to settle these questions without a full series of old and young birds, correctly identified, from all the localities where Pied Woodpeckers have ever been found. Great differences of opinion also exist among systematists as to the number of species to be admitted; but we believe that the remarks made by Professor Sundevall in his able treatise on the Woodpeckers will be found to be in the main correct, though some of his conclusions are questioned by Mr. G. R. Gray in his recent 'Hand-list.' There seems, however, to be little doubt that true *Picus major* extends all over Europe and across Siberia to Japan; for we could not see any difference in specimens collected in the latter island by Mr. Whitely, when compared with European birds. We have had before us a very large series of birds from all parts of Europe, and have found little or no variation in examples from different localities, not forgetting, however, Mr. Gurney's Shetland skin, which agrees most nearly with a Danish specimen sent us by Mr. Benzon. The latter gentleman also informs us that eggs of *P. major* taken in Denmark run smaller than those procured from Southern Europe; so that it is possible that a full series of specimens may prove the existence of another Pied Woodpecker in Northern Europe. Messrs. Elwes and Buckley likewise publish the following note of Canon Tristram's on a series of Turkish birds sent home by Mr. Robson, to the effect that the Woodpecker of Constantinople is "an intermediate form

between the European *Picus major* and the *P. syriacus* of Hemprich and Ehrenberg. It differs in the arrangement of the colours of the neck-plumage very slightly from the western bird, but still varies in the direction of the eastern." Dr. Tristram does not say wherein the variation of the Turkish bird consists; but we believe that he has a great deal of reason in what he says. The great distinction between *P. syriacus* and *P. major* lies in the possession by the former bird of a continuous line of white from the base of the bill on to the sides of the neck; in *P. major* this white band is crossed just behind the ear by a line of black which joins the moustache to the crown. Another striking difference between the two species lies in the tail, *P. syriacus* having only very few spots of white on the two outer rectrices, whereas in *P. major* nearly the apical half of the three outer feathers is white with a few irregular black markings. The birds sent by Mr. Robson seem to have more white on the tail, are more mealy in plumage, and have a narrower line of black connecting the moustache with the crown; still they do not present sufficient differences to entitle them to hold even subspecific rank.

In Algeria the place of *P. major* is taken by an allied species, *P. numidicus*, which is certainly clearly characterized, though Professor Sundevall considers it to be only a subspecies of the former bird. It has a very distinct red band across the breast both in the old and young males. We may here mention that occasionally a red feather may be seen on the breast of both old and young of *P. major*, but very feebly developed, and constituting nothing more than a tinge. In Palestine and Syria it is represented by *P. syriacus*, another species, *P. feliciæ*, according to Malherbe, occupying the same area; Professor Sundevall believes these two birds to be the same species; but Mr. G. R. Gray places them in different sections of the genus, putting *P. syriacus* along with *P. medius* and *P. scindeanus*. In Persia another variation in form takes place, the bird from this locality being *Picus khan*, Defil., and in Central Asia another form occurs, having been lately separated by Count Salvadori as *P. leucopterus*. In the Himalayas it is replaced by *P. himalayensis*, and so on to China, where four species, named by Malherbe respectively *P. gouldii*, *P. mandarinus*, *P. cabanisi*, and *P. suciani*, are said to take the place of *P. major*. Concerning these different forms Mr. Swinhoe writes as follows:—"While on the subject of Woodpeckers, I should like to make a few remarks on the eastern races or so-called species of the *Picus major* group—namely, *Pici mandarinus*, *luciani*, *gouldii*, and *cabanisi* of Malherbe's Monograph. The form of this bird found in the North-west Himalayas, and described by Jardine and Selby as *P. himalayanus*, and Hodgson's species, *P. majoroides*, from the south-west Himalayas, both appear to have the red breast-spot which, in the adult dress, adorns the breast of the Chinese bird. I will here add some remarks on our Chinese species, made after a careful comparison of my series from China with the plates and descriptions in M. Malherbe's work."

"*Picus mandarinus*, Malherbe.—*P. major*, L., apud Von Schrenk and Middendorff."

"M. Malherbe has described and figured four species of true *Picus* from China; of the exact locality of one of these only he speaks with confidence, his type of *P. mandarinus* from Whampoa, in the Museum at Berlin. I have in my collection a specimen from Whampoa, three from Canton, three from Foochow, and one from Pekin. From Whampoa and Canton I have two skins which answer to the brown underplumage of his *P. luciani*, but have broader and more black bands on the lateral rectrices. I have two from Canton answering to *P. mandarinus*, but with a less bright red spot on the breast. My three birds from Foochow correspond

nearly to his *P. gouldii*, which I presume is from Shanghai, but are browner on the underparts, and also have indications of the red spot on the breast. My example from Pekin is of the bright under-tints of *P. cabanisi* with an equally bright red breast-spot; but has more white on the wings, and the almost white lateral rectrices of *P. luciani*. From a careful comparison of the skins of this variable Woodpecker in my possession, I have come to the conclusion that they are all certainly of one species; for if we were to go on such nice specific distinctions as those pointed out by M. Malherbe, every bird, even out of a number from the same locality, might be regarded as a distinct species. In one of my Canton birds the secret of the very brown underplumage is developed; it is a young male with the crown red. Hence I gather that the special brown plumage in this species is a mark of the young, the red pectoral spot showing itself and intensifying as the bird advances to maturity, while the underplumage at the same time whitens. The white on the wings and tail is always less in the young individual, and widens considerably with advancing age. No two specimens agree precisely in the size or distribution of the white on the wings or the bands on the tail. The further north the locality whence the birds are derived, the larger their sizes generally, and more conspicuous the white markings. My Foochow specimens are larger than those from Canton and Whampoa, and have more white on the tail; while the bird from Pekin is as light on the underparts as *P. major*, though, being adult, it carries the characteristic bright red pectoral spot. At the same time, being from a northern locality, the white spots on the wings and the white bands on its tail are very largely developed. Had M. Malherbe known the exact localities of the individuals he describes from, and had he had a larger series of skins to examine, I do not think he would have advanced such strong opinions as to the specific merits of the four species he has introduced into his excellent work." Again, Mr. Swinhoe remarks further on in the same volume of the 'Proceedings' from which the above extracts are taken:—"Races of this variable bird are found throughout China, from Canton to Pekin. The further north they extend, the whiter and more spotted they become, until the Amoorland is reached, where Von Schrenk reports the form identical with *P. major* of Europe." The remarks of Mr. Swinhoe regarding the dark plumage of the Chinese Woodpeckers being the young are interesting, as oftentimes in Europe specimens are met with having the forehead and underparts very deeply coloured; but this we have always considered to be due to a stain.

We have endeavoured to show in the foregoing paragraphs the present state of our knowledge respecting the various races or subspecies of *Picus major*. It now remains to give an account of the species in Europe itself. Its distribution in Great Britain during the breeding-season is thus given by Mr. A. G. More:—"Not in Ireland. Breeds in small numbers in nearly all the southern and midland counties of England, becoming rarer northwards. Very scarce in Scotland, though Macgillivray describes it as formerly not uncommon near Dunkeld, and mentions Loch Ness, the Spey, and Braemar as localities where it is not unfrequent. The bird has been observed by Mr. Selby on the banks of the Dee and Spey. Mr. T. Edward marks the Great Spotted Woodpecker as resting occasionally in Aberdeenshire; and in the 'Natural History of Dee-side' it is described as resident in the woods, but very rare. Mr. Dunbar considers that it breeds regularly in the woods at Castle Grant, in East Inverness; and he tells me that the bird has been observed also in Ross-shire." In Scotland it has more recently been

of commoner occurrence; and our friend Mr. E. R. Alston writes to us that it "appears to be increasing in numbers as a winter visitor to the northern and eastern counties, rarer in the west." Messrs. Gray and Anderson observe:—"This Woodpecker, which of late years has become rather a common visitor to the eastern districts of Scotland, has been obtained several times in Ayrshire, and once on the outskirts of the county. One was shot at Cummock; another at Fullarton, near Froon, on the 2nd November 1868; and a third, about five weeks later, near Ayr. For these notices we are indebted to Mr. Oliver Eaton, bird-preserver, Kilmarnock. A specimen was shot at Inverkip, Renfrewshire, in October of the same year. This locality is very close to the boundary of our district." We have already alluded to its occurrence in the Orkneys in large numbers, and we have received the following note from Mr. J. H. Gurney, jun., which may be inserted here:—"The variety of the Greater Spotted Woodpecker with grey wing-coverts and striated flanks, which I have lent you, was the first ever obtained in Shetland, where the species has only appeared upon two occasions. Dr. Saxby states that it was shot by him in Unst, on the 3rd of September 1861, the wind having been blowing from the south-east for about two days previously (Zool. 7752). During that month and the next many more specimens of *Picus major* were killed throughout the whole extent of Shetland and Orkney. Strange to say, there was not one male among them, and, with one exception, they were all birds of the year (Zool. 7933). Nor was the visitation confined to one locality. From Norfolk and from Cambridgeshire came similar reports of their surprising numbers (Zool. 7847). Seven years afterwards they again spread themselves over the east coast from Shetland southwards, and for the second time not one adult bird was obtained by Dr. Saxby (Zool. 1761)." A still more curious circumstance in connexion with this unexpected migration is the fact that in September 1861, according to Herr Sysselmaand Müller, it was common on the Färoes, this being the identical month in which Dr. Saxby first noticed the influx of migration into Shetland; and it is much to be regretted that more examples were not preserved, seeing that one of the specimens procured in the latter island is scarcely referable to *Picus major*. Towards the south-western part of England it is not so common. Mr. J. Brooking Rowe considers it scarce in Devon. Mr. Rodd says, in Cornwall it is "rare, sometimes seen in the eastern woodlands, and a specimen now and then obtained from Treneere Lawn and Trevaley, near Penzance." Mr. Thompson has recorded it from Ireland, as follows:—"A specimen of *P. major*, preserved in the Museum of the Royal Dublin Society, was shot in the vicinity of that City a few years since. In the manuscript notes of the late Mr. Templeton it is stated that an individual of the same species was sent to him in August 1802, from the county of Londonderry."

It is a very common bird throughout all northern Europe. Kjærbölling says:—"Here in Denmark it is both a resident and a partial migrant or wanderer; for some do not leave the neighbourhood of their summer quarters, or at least only wander a short distance away in the autumn, whereas others (in September and October) wander far away, and only return back in the spring, in the month of March." In Norway, Mr. Collett tells us that it "breeds sparingly above Trondhjem, up to the Polar Circle. On the sides of the Fells it is no longer found, in the subalpine region. Near Christiania it is the commonest Woodpecker, and is found as plentifully in the conifer as in the green woods." Mr. Alexander Clark Kennedy also writes to us:—"I have often met with this species in the vast pine forests of Norway; but in my opinion it is not so

numerous there as the Lesser Spotted Woodpecker (*Picus minor*). Many a time, however, in the spring of 1871, while driving in my sledge over the snow, I saw this pretty bird climbing up the tall firs, and flying from tree to tree; and in the early morning, when the sun was just peeping over the mountains, the tapping of the Woodpecker was often the only sound which broke the stillness of those grand forest-solitudes, the like of which are to be found in no part of Europe, excepting old Norway."

Wheelwright found it rare in Lapland; and Schrader says it is only occasional in the conifer woods of that country. Von Wright states that it is the commonest Woodpecker in Finland; and Dresser, who spent some time in Finland, can fully indorse this statement. They do not, however, appear to be so numerous in the north as they are in the southern parts of this country. The Finnish name for Woodpecker, *Tikka*, is derived from the sharp call-note of this bird, which resembles the work *tick*.

Pallas says it is found commonly throughout all Russia and Siberia in the woods, preferring especially those of larch and pine. Radde also states that it is the commonest of the Woodpeckers in Siberia. Messrs. Dybowski and Parrex found it abundant in larch and pine woods in Dauria; and Dr. von Middendorff shot it to the north of Jenesejsk and in the neighbourhood of Udskoj-Ostrog during his journey in Siberia. Schrenck found the Great Spotted Woodpecker common throughout the Amoor country at all seasons of the year, and says that he never observed it so abundantly in conifer as in non-evergreen groves, and noticed it particularly on the willow-covered islands of the Amoor river. In Saghalien it is also common, both in the conifer woods and the groves of mixed conifer and non-evergreen trees, and those of aspen, birch, and willow. He adds, "Six specimens brought from the Amoor by Radde agree precisely in colour and markings with the European bird." Mr. Whitely and Captain Blakiston obtained it in Japan; and it was likewise procured at Hakodadi during Commodore Perry's expedition. The first-named collector says in his paper on the birds collected by him in Northern Japan:—"Of the species of Woodpeckers seen at Hakodadi this is the most common, and frequents all the large forests and woods in the neighbourhood. I obtained a number of specimens." Mr. Swinhoe, it should be noticed, does not give *Picus major* as an inhabitant of Japan in his comparative list of species (P. Z. S. 1863, p. 333). This is perhaps an oversight, or he may have thought that the Japanese bird was probably one of the allied Chinese species, as Mr. G. R. Gray gives *P. gouldii* as an inhabitant of Japan. We may state that we have been unable to separate in any way the Japanese Pied Woodpeckers from the European *P. major*; but the subject requires more ventilating.

Returning to Europe, we find that the present species, according to Meyer, is abundant in Livonia and Esthonia, and is also common in Germany. Herr von Pelzeln informs us that it breeds in the Thiergarten Park, near Vienna; but in Styria, Seidensacher considered it an uncommon bird. In some springs Schlegel says it is abundant in Holland; while Mr. H. M. Labouchere has sent us the accompanying note:—"The Great Spotted Woodpecker is by no means rare in some parts of Holland, and I have even seen it in a garden in the centre of Amsterdam. I have observed, however, that in those parts where the Green Woodpecker is abundant (for instance, in the pine woods of the province of Utrecht) *Picus major* is of very rare occurrence." In Belgium also it seems to be only an irregular visitant, for De Selys

Longchamps writes as follows:—"Rare and accidental during migration in Belgium, travelling in pairs in spring and autumn." Kræner, in his list of the Birds of Alsace and the Vosges, states that it is sedentary on the mountains and low country, inhabiting the woods and visiting the orchards in winter. According to Degland and Gerbe it is not rare in France, where it breeds in many localities. In the southern portions of the latter country it is recorded by MM. Jaubert and Barthélemy-Lapommeraye as "sedentary in Provence, although commoner at the end of the summer. It inhabits the wooded regions of the Var, and the High and Low Alps, and very rarely the plains near the sea." Bailly says, "The Great Spotted Woodpecker is sedentary in Switzerland and Savoy, very common in the woods to the northward, and particularly so in those of the Haute Savoie, Tarantaise, and Maurienne. Near Chambéry it is less known than the Green Woodpecker; for it is in reality rarer even in the winter, when the Woodpeckers wander so much." Count Salvadori writes to us:—"It is very common in Italy, and is found in all woods, both on the mountains and the plains, and about cultivated land on which trees are scattered. It is numerous in Sardinia in the green oak woods, and the native sportsmen attract it by hammering with a stone on the butt of their guns." With respect to its occurrence in the last-named island we have received the accompanying note from our friend Mr. A. B. Brooke, who has just returned from a natural-history tour in that locality:—"I found this Woodpecker extremely common in the large ilex and cork forests through Sardinia; but I may mention that during three visits to that island at different times of the year I have never met with any other species, although both *Picus minor* and *Gecinus viridis* are said to occur." Mr. Howard Saunders says, "in Spain it is generally distributed throughout the wooded districts," and he found it breeding near Aranjuez. Lord Lilford observed it very abundantly near San Ildefonso; and Major Irby informs us that "it is known near Gibraltar as the *Pito real*, the Green Woodpecker not being found in the vicinity. It is resident and abundant in the cork wood, nesting in May; and some are always to be found on the decaying alder trees in the 'Soto Gordo.'" It is common in Portugal. In the Canaries Dr. Bolle observed it, and says it was the only Woodpecker found on the islands. Berthelot believes it to be resident on the Canaries. It has also been said to be an inhabitant of the Azores; but Mr. Godman, our best authority on the avifauna of these islands, states:—"M. Morelet gives *P. major* in his list of the Birds of the Azores; but I am not aware that he ever obtained specimens, and I am inclined to think that there is but one species resident."

"In Sicily," writes Professor Doderlein, "this is the commonest of the family, and is sometimes killed in the immediate neighbourhood of Palermo, becoming much more abundant in the wooded districts of the interior. Its vulgar name is *Lingua longa di li turdi*, because some arrive in October when the Thrushes pass." Lindermayer says that in Greece it is "not only found in the northern wooded country, but I have also observed it in the oak woods of Messina, on the banks of the Alpheus, very little above the level of the sea; and Von der Mühle also states that he has found it in Arcadia. Whether it breeds in the districts above referred to is unknown." Dr. Otto Finsch found it common in Bulgaria; and Messrs. Elwes and Buckley, writing on the Birds of Turkey, state that they observed it to be very "common in all the wooded districts that we visited. Some specimens shot in Macedonia are of a pure white underneath, instead of the usual dingy colour." Strickland has stated it to be common near Smyrna;

but Mr. G. R. Gray believes that the species he met with was *Picus feliciæ*: this identification is also a subject for inquiry. In Southern Russia Professor von Nordmann states that it is common "in all the woods and groves on the coasts of the Black Sea, visiting also the gardens in the steppes in autumn and winter. Nests in the Crimea."

As will be seen by the various localities we quote, the Great Spotted Woodpecker is generally spread over Europe. Naumann erroneously states that it occurs in North America; but its place is here taken by its congener *Picus villosus*. In almost every part where it is met with it is not a true resident, and still can scarcely be called a migrant, as during the autumn it undertakes shorter or more extended wanderings, returning again to its old nesting-haunts early in the spring. In its habits it is quarrelsome and fond of solitude, and cares little for the company of either individuals of its own species or other birds, although in its autumnal excursions it is often accompanied by Nuthatches, Creepers, Titmice, and other small birds.

It is an active, busy bird; and its clear sharp note (*tick* or *tchick*) and sprightly tapping on the trees often cause a pleasant interruption in the stillness of the woods in winter. It moves about with peculiar swiftness and agility, and will drop on to the trunk a little distance from the ground, ascend quickly in a spiral direction nearly to the top of the tree, and, should it not find any thing worth looking after, fall suddenly off, and with a few active movements of the wing throw itself on to another tree, which it proceeds to examine in a similar manner. Its usual tapping consists of a succession of smart blows, which sound as if the bird were fully in earnest in its search after food; but in the spring of the year, at the commencement of the pairing-time, the male bird often makes a most peculiar sound by sitting on some dead branch and hammering so quickly that the noise of the taps, combined with the vibration of the dead bough, produces a loud whirring noise, which may be described as *errrrr* or *orrrrr*; and with this the bird calls his mate. Active as this bird is on the tree, it is equally awkward on the ground, whither, however, it seldom goes, and only when in search of such food as ants, which it cannot otherwise procure; for, like the Green Woodpecker, it sometimes feeds on these insects in the autumn and winter, although they are not so staple an article of food as with the last-named bird.

From our friend Mr. A. Benzon we have received the following letter:—

"In Danish this bird is called *Flagspet*, otherwise *Buntspet*, *Flekspet*, *Trœhakker*, all of which names are used both for it and *Picus medius*. The Great Spotted Woodpecker is our commonest species, and breeds here and there in all forests where it finds rotten trees that are suitable for boring out its nest-hole. Sometimes it uses the same hole for two successive years, and, if disturbed, makes another on the same branch or trunk; and at Dyrehaven I found a branch in which were no less than seven holes, of which of course only one was tenanted.

"It has eggs in May, rather sooner than *Picus medius*, often early in the month, more generally about the middle, and but seldom at the end of May, and then only in late seasons. In 1870 I found young birds at Dyrehaven as early as the 22nd of May. This year (1870), on account of the cold spring, it is very late. Eggs taken in Denmark are generally smaller in size than those from the south of Europe."

Mr. Gould gives the following account of the present species:—

"In its habits there are few birds more shy and recluse. Unlike the Green Woodpecker, it seldom approaches the dwelling of man, but keeps to the topmost branches of the large trees;

occasionally, however, it deviates from this kind of life, and descends to the pollard oak, the willow, or the fence-rail, and in autumn resorts to gardens for the sake of the wall-fruit. The young birds of the year are particularly mischievous in this way, and are often caught in the garden-net, or destroyed by the gardener's gun. Most persons must be so well acquainted with the mode of progression of this and all other Woodpeckers, that a description is almost unnecessary; but I may state that it traverses in a series of jumps both the larger stems and the smaller branches by means of its short tarsi, strong zygodactyle toes, and sharp curved claws, and is supported, when at rest, by the close application of the stiff tail-feathers to the trunk or branch. While thus rambling over their surface, it carefully scrutinizes every crevice for spiders, coleoptera, and the larvæ of insects. The flight is performed in a series of dippings, produced by the sudden expansion and contraction of the wings."

Mr. Sterland, in his 'Birds of Sherwood Forest,' remarks:—

"It is an active climber, generally taking a diagonal course up a tree; and I have sometimes observed that when it has reached the base of a great arm, it has left the trunk, and with great rapidity run round the arm spirally for several yards of its length, and then flown off to the trunk, and resumed its course upwards. This motion, which was performed without a break, had a very singular appearance." Mr. J. H. Gurney has sent us the following very interesting note:—"Some years since a pair of Great Spotted Woodpeckers were confined for a short time in the Zoological Gardens, in one of the cages outside the Parrot-house. They were fond of traversing the wire top of their cage with their backs downwards and parallel to the ground, their bellies being also parallel to the top of the cage, which they traversed *not by climbing*, but by a succession of hops in this inverted position. I watched them for some time; and the action was so curious that, had I not seen it, I certainly should have refused to believe it. They actually hopped in an inverted position, letting go of the top of the cage with both feet at once, and then catching hold again a little further on, and, as far as I could see, without at all using their wings."

Concerning the curious jarring note of the bird, Yarrell writes:—

"A particular sound, made both by the adult birds and also by the young birds of the year when seeking their own living in the autumn, has reference to one of their modes of obtaining food, and is thus explained by the editor of the last edition of Pennant's 'British Zoology:' 'By putting the point of its bill into the crack of the limb of a large tree, and making a quick tremulous motion with its head, it occasions a sound as if the tree was splitting, which alarms the insects, and induces them to leave their recesses; this it repeats every minute or two for half an hour, and will then fly off to another tree, generally fixing itself near the top for the same purpose. The noise may be distinctly heard for half a mile. This bird will also keep its head in very quick motion while moving about the tree for food, jarring the bark and shaking it at the time it is seeking for insects.'" Mr. Gould also observes:—"During the pairing-season this bird produces a most peculiar, loud, jarring sound, by a rapid succession of strokes with its bill upon the dead upright branch of a tree; this extraordinary and undescribable noise resounds through the forest, and may be heard at the distance of a mile in this country, and even further in the still and almost lifeless woods of Norway. It also utters its '*gich*'-like note at intervals when perched on the pine and other trees; it was this latter note which generally drew my

attention to the bird in the interior of the great pine-forests of Norway." Beyond the ordinary call-note of the bird, the present species utters no other sound; but an instance is given in the 'Field' for October 25th, 1867, of one whistling like a Starling.

The Great Spotted Woodpecker pairs in March or April, at which time its call-note and the peculiar rattling sound above referred to may be often heard. The nest is bored in some branch or trunk of a tree, the heart of which is rotten, and consists of a circular hole, deepening down for a foot or eighteen inches into the tree, on the bottom of which, on the wood itself without any other preparation, the eggs are deposited. Generally five eggs constitute the complement, sometimes four; and, according to Naumann, both male and female incubate in turn, the term of incubation being from fourteen to sixteen days. The young are very carefully tended by the parents, and are by them fed with insects &c. Pastor W. Pässler gives an instance of a pair taking possession of a nest-box in his neighbour's garden, and says he never otherwise knew them to breed in any place but a hole made by themselves. The food of this bird is chiefly insectivorous, during the spring and summer almost entirely so; and as it feeds on the most destructive of insects, it is the best natural guardian of our woods that we possess. It feeds on caterpillars, larvæ, and the eggs of the various moths and butterflies, and is the chief exterminator of the so destructive insects of the *Bostrichus* group. It also, however, eats nuts, chiefly hazel-nuts, and is very fond of extracting the seeds from the pine-cones, in order to do which it fixes the cone in a crack in a tree, or else bores a hole convenient for that purpose, and then pecks out the seeds at its leisure. According to Dr. Gloger it eats hazel-nuts, and also, like the Green Woodpecker, feeds on ants in the winter. Mr. Sterland observes:—"They are not such exclusive insect-eaters as the preceding species, but vary their diet with the seeds of various trees, especially those of the pine;" and Mr. Collett writes to us:—"Besides feeding on all sorts of insects, it also eats the seeds of the spruce; and in order to get these it jams the cone into a crack in the bark of a tree, or the bird itself makes a hole in the tree for that purpose. In the autumn it feeds also on berries, and is therefore often caught in snares set for Thrushes. It is not shy, and will often allow itself to be approached within a few feet, but ought never to be molested, on account of its great utility as a destroyer of injurious insects." On the tickets of three of Mr. Gurney's specimens the contents of the stomachs were marked as earthworms and aphides, a great caterpillar, and the larvæ of the Leopard Moth.

Mr. A. W. M. Clark Kennedy also writes to us:—

"I find by my note-book for 1868, that on the 14th of June in that year, whilst walking in Little Glenham Park, Suffolk, I found a young Great Spotted Woodpecker, fully fledged and ably to fly, sitting on the grass beneath an old tree. It must have fallen from its nest, the entrance to which I could see at the height of some thirty feet from the ground, and in which the rest of the young birds were chirping and making a great noise. On my approach it took several short flights, but was eventually captured, the parent bird flying from tree to tree alongside of me during the chase, apparently quite fearless, and trying to assist her offspring; but as soon as the latter was secured, the old one flew straight away, and I never saw her again. I fear the old bird, seeing the fate of one of her young, was disgusted, and deserted the remainder in the nest; for though I watched the hole for a long time next day, she did not return, nor did I

hear any more chirping; so I was obliged to come to the conclusion that the poor little birds had been left to starve to death."

With reference to the occurrence of the present species near London, Yarrell remarks:—

"I have referred to Kensington Gardens as a locality in the vicinity of London rather remarkable for the number of its insectivorous birds. The Woodpeckers are frequently to be seen and heard there; and I remember, some years ago, seeing a family of the young of the species now under consideration, which had been taken and reared by the keeper at the Bayswater Gate, which were climbing over the inside of their cage as it hung against a large tree near the lodge." Mr. Edward Bartlett has likewise shot it in the Zoological Gardens; and it is by no means uncommon near Hampstead. The following observations have reference to its migration to England. Mr. Selby writes, "In Northumberland, scarcely a year passes without some of these birds being obtained in the months of October and November. This induces me to suppose that they are migratory in some of the more northern parts of Europe, perhaps in Norway and Sweden. They arrive about the same time as the Woodcock and other equatorial migrants, and generally after stormy weather from the north or north-east." Mr. Stevenson continues, in the 'Birds of Norfolk':—"There is no doubt that the same remarks apply to Norfolk, since I find, on referring to my notes for the last few years, that more than half the specimens which have come under my notice have been killed in the months of October and November, and for the most part in the vicinity of the coast*. The strongest evidence, however, of the migratory nature of this Woodpecker occurred in the severe winter of 1861, when, between the 5th of November and the following February, between twenty and thirty specimens (old and young) were killed in different parts of the county, and some fourteen or fifteen of them in the neighbourhood of Lynn." About the same time an equally unusual number appeared in Cambridgeshire, as recorded in the 'Zoologist' (p. 7847) by Mr. S. P. Saville; and Mr. Henry L. Saxby, in the same journal (p. 7932), gives a most interesting account of their visit to the Shetland Isles during September and October of the same year, a still more remarkable direction for any migratory movement. The wind, says Mr. Saxby, was steadily blowing from the south-east at the time; and he was also informed that several were killed at Orkney. Mr. Saxby's account of the influx of this species into Shetland is as follows:—"Strange to say, not one female was to be found among them, and, with one single exception, all were first year's birds. The first two presented nothing unusual in their appearance; but on taking the third one into my hand, I at once remarked the worn look of the bill, tail, and claws. I immediately suspected that this was caused by the scarcity of trees having driven the bird to seek its food among stones and rocks; and upon opening the stomach my suspicions were confirmed by the discovery, among other insects, of several small beetles which are found only upon the hills. I may mention that these beetles are very abundant in Shetland, although I do not remember having seen any of the kind in England; they are about the size and shape of one half of a split pea, black, edged with scarlet. I afterwards saw Spotted Woodpeckers in various parts of the hills and walls, and even in high sea-cliffs; I also saw them on roofs of houses and upon dung-hills; and although several were killed upon corn-stacks, I never found any grain in the stomach.

* The Rev. E. W. Dowell had a bird of this species brought to him in the month of November 1848, which had been taken in a poacher's net at Salthouse, close to the sea.

They were frequently to be met with upon the ground among heather, where at all times they were easily approached, but more particularly in rainy or misty weather, when, their plumage becoming saturated with moisture and rendering them too heavy for a long flight, many were stoned to death by boys. Those in the garden fed largely upon the seeds of the mountain-ash, which they broke open the berries to procure, sometimes dropping a whole cluster upon the ground, and descending to feed, but more frequently breaking the berries to pieces as they hung upon the trees. But even in the garden they did not confine themselves to the trees; at one time they might be seen busily searching amongst moss and dead leaves, at another in the midst of a tuft of coarse weeds, and, again, intently examining the spiders' webs upon the walls. It was quite a common occurrence to see them in the open meadows scattering aside the horse-dung with their bills, and thus procuring abundant supplies of worms and grubs."

The eggs of this bird measure from $1\frac{1}{40}$ by $\frac{31}{40}$ inch to $1\frac{3}{40}$ by $\frac{33}{40}$, and are pure glossy white in colour. In shape they are oval, tapering rather to the smaller end. Dr. E. Rey gives the average size, judging from a series of eighty-three eggs, as 25·7 millims. by 17·6 millims.

The descriptions and figures of the adult birds have been taken from a pair in our collection, from Sweden, the young one being also in our own possession, from the neighbourhood of London. We may add that we have lately shown Mr. Gurney's Shetland example to Mr. Gould, and, like ourselves, he is unable to identify it with *P. major*, but inclines to think it is *P. leuconotus* in some stage of plumage.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, b. Hampstead, June 1871 (*Burton*). *c.* Hampstead, September 1870 (*Davy*). *d, e.* France (*Fairmaire*). *f, g.* Denmark (*A. Benzon*). *g, h.* ♂, ♀. Wermland, 1869 (*Meves*). *i, j.* Sweden (*H. Wheelwright*). *k, l.* Piedmont (*Salvadori*). *m, n.* Crimea (*Whitely*).

E Mus. Howard Saunders.

a, b. Hampstead (*Spencer*). *c.* Gibraltar (*L. H. Irby*). *d, e.* Turkey (*T. Robson*).

E Mus. Lord Lilford.

a, b. San Ildefonso, Spain (*L.*). *c, d, e.* Sweden (*Wheelwright*).

E Mus. H. B. Tristram.

a. Morehead, Devon (*H. B. T.*). *b.* Greatham, Durham, October 21st, 1863 (*J. H. Gurney*). *c, d.* San Ildefonso, Spain (*Lord Lilford*). *e.* Broussa, Asia Minor, February 8th, 1866 (*T. Robson*).

E Mus. J. H. Gurney, jun.

a, b. Easton, Norfolk, June 18th, 1870 (*Gunn*). *c.* Keswick, Norfolk, March 28th, 1867 (*Anness*). *d.* Hingham, Norfolk, December 14th, 1867 (*Gunn*). *e.* Norwich, January 12th, 1868 (*Gunn*). *f.* Cambridgeshire (*Baker*). *g.* Cambridgeshire (*Leadenhall Market*). *h.* Halligarth, Shetland, September 1861 (*Saxby*). *i.* Dunse, Scotland.

E Mus. A. B. Brooke.

a, b. Sardinia, April 21st and May 17th, 1871 (*A. B. B.*).



ALGERIAN PIED WOODPECKER.

PICUS NUMIDICUS

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PICUS NUMIDICUS.

(ALGERIAN PIED WOODPECKER.)

Picus numidus, Malh. Mém. Acad. Roy. Metz, ii. p. 242 (1842).
Leuconotopicus numidicus, Malh. Rev. Zool. 1845, p. 375.
Picus numidicus, Gray, Gen. of B. iii. p. 21 (1849).
" *Picus mauritanus*, auct.," Brehm, Naumannia, 1856, p. 275.
" *Picus lunatus*, auct.," Brehm, Naumannia, 1856, p. 275.
Picus jugurtha, Malh. Monogr. Picidæ, i. p. 65.
Dendrocopus numidicus, Cab. & Heine, Mus. Hein. ii. p. 34 (1863).

Figuræ notabiles.

Malherbe, Monogr. Picid. iii. pl. xlviii. figs. 1, 2, 3, 4.

♂ *ad.* niger: occipite coccineo: fronte fulvescente: facie laterali albidâ: fasciâ mystacali et colli lateribus totis nigris, post regionem auricularem pileo conjunctis: plagâ triangulari ad latera postica colli positâ albâ: scapularibus albis: tectricibus alarum nigris, dorso concoloribus, medianis latè albo terminatis, plagam alarem albam formantibus, majoribus ferè omninò nigris: remigibus nigris, versùs apicem pallidioribus, extùs et intùs maculis albis transnotatis: caudâ nigrâ, rectricibus exterioribus tribus albo irregulariter notatis: subtùs albidus, torque pectorali nigrâ, valdè coccineâ mixtâ: abdomine centrali et imo coccineis: subalaribus albis, paullò nigro variis: rostro cyanescenti-plumbeo, mandibulâ pallidiore: pedibus plumbeis: iride rubrâ.

♀ mari similis, sed cristâ occipitali absente.

♂ *juv.* similis adultis, sed fronte sericeo-nigrâ: pileo antico coccineo, occipite nigro: abdomine imo pallidiore coccineo.

Adult Male. Above black; occiput crimson; forehead fulvous; sides of the face greyish white, as also a triangular patch on the sides of the neck; between the white of the ear-coverts and this patch runs a broad line of black, connecting the hinder part of the crown with the moustache and sides of the neck, which are also black; scapulars and median wing-coverts white, forming a broad oblique white band across the wing; the rest of the wing-coverts black; quills black, inclining to brown at the tips, spotted on both inner and outer webs with white; tail black, the three outermost feathers irregularly marked with dull white, this colour predominating on the outermost feather; under surface of the body dull white, with a broad pectoral gorget of crimson, slightly mixed with black; the centre of the abdomen and vent crimson; under wing-coverts white, with faint black mottlings; bill dark blue-grey, the lower mandible paler; feet leaden-grey; iris reddish. Total length 9 inches, culmen 1·2, wing 4·8, tail 3·4, tarsus 0·9.

Adult Female. Exactly similar to the male, but the head entirely black, with no crimson occipital crest.

Young. Differs from the adults in having a black forehead and the fore part of the head crimson, the hinder part being black.

Although by many naturalists the various Pied Woodpeckers are considered to be nothing more than races or, as we prefer to call them, subspecies of the ordinary *Picus major*, we cannot admit that the present bird can be for one moment included in this category. It possesses the following excellent specific characters, which distinguish it from *Picus major*, viz. a distinct red pectoral band, and a longer and more slender bill. But the most remarkable point in connexion with this species is, in our opinion, the black forehead of the young bird, which is afterwards lost, and a fulvous colour assumed, as is the case with the ordinary Pied Woodpeckers.

The Algerian Pied Woodpecker is, as its name implies, an inhabitant of Northern Africa, being found in Algeria and Tangiers, and is also stated by Malherbe, without hesitation, to be in the Canaries. Dr. Bolle, who has visited these islands, "speaks of a Woodpecker under the name of *Picus major* as being common on the Canaries, and in Morocco in localities where the pine-trees grow; and he surmises that this may probably be *Picus numidicus*. In his second paper on the Birds of the Canaries, he also considers that it is this species, as he speaks of it as "*P. numidicus*?" Dr. Bolle writes that it is tolerably common in the pine-wood of Chasna, where he observed it paired in April. It is not less generally distributed in Pinal, in Gran Canaria; and Berthelot assured him that it had been killed at Monte de las Mercedes, near Laguna, where only non-evergreen trees are found."

While in Tangiers, Mr. C. F. Tyrwhitt Drake found it on the Tetuan mountains; and Mr. Osbert Salvin says he "shot one of these birds in a tree that overhangs a small marabout that stands on the north side of the eastern precipice of Djebel Dekma," during his expedition to the Eastern Atlas. Respecting its distribution in Algeria, we give the following note from the great work of Captain Loche:—"So far as we know, this species has hitherto been met with only in Algeria, where it inhabits all the forests of the three provinces. Its flight is swift, tortuous, and jerky; it is shy, and not easy of approach, excepting at nightfall, when, before retiring for the night into its roosting-place in a hollow tree, it flies round the spot several times. It nests in a hole in a tree, and deposits four or five eggs, rather short and glossy, white in colour, measuring about 23 by 18 millimetres. The individuals which frequent the burnt forests have the under parts of their plumage brownish-coloured, which arises from friction against the burnt bark of the cork trees. The food of this Woodpecker consists of larvæ and various species of insects; and only when hard pressed does it ever feed on berries. It hunts carefully after insects that infest the bark of trees, and is of great use in destroying numbers of noxious insects that do so such damage to our forests."

It has even been supposed to occur in Germany; for Dr. Altum records the occurrence of this species in Germany, having obtained a male at Œlde, in Münster, which was in company with a female of *Picus major*, or at least a bird that he could not find different from a female of the last-named species. Dr. Altum particularly refers to the red band across the breast, but states that the bird did not otherwise differ from males of *Picus major*. He further found in his collection two young birds having one or two small red feathers in the breast.

The figures and descriptions of the adults are from specimens in our own collection; the young bird, however, is drawn from the figure in Malherbe's Monograph of the *Picidæ*.



SYRIAN PIED WOODPECKER.
PICUS SYRIACUS.
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SYRIAN PIED WOODPECKER.

PICUS SYRIACUS.

PICUS SYRIACUS.

(SYRIAN PIED WOODPECKER.)

Picus syriacus, Hempr. & Ehr. Symb. Phys. Aves, fol. r. note 5 (1828).
Picus major, Strickl. P. Z. S. 1836, p. 100 (nec Linn.).
Campethera syriaca, Gray, Gen. of B. iii. App. p. 21 (1849).
Picus fuliginosus, Licht. Nomencl. Av. p. 75 (1854).
Picus cruentatus, Antin. Naumannia, 1856, p. 411.
Picus feliciæ, Malh. Monogr. Picid. i. p. 127 (1861).
Dendrocoptes syriacus, Cab. & Heine, Mus. Hein. v. p. 41 (1863).
Dendrocopus feliciæ, Cab. & Heine, Mus. Hein. v. p. 30 (1863).
Picus khan, De Filippi, Viagg. in Persia, p. 350 (1865).

Figuræ notabiles.

Antin. Naumannia, 1856, Taf. 4; Malh. Monogr. Picid. iii. pl. xx. fig. 4 (*juv.*), et pl. xxviii. figs. 8–11 (*ad.*).

♂ *ad.* suprà niger: occipite coccineo: fronte et facie laterali totâ, cum colli lateribus, albis, lineâ nigrâ transversali nullâ: tectricibus alarum nigris, majoribus interioribus et scapularibus albis plagam alarem magnam formantibus: remigibus nigris, primariis versùs apicem brunnescentibus, extùs et intùs albo maculatis: caudâ nigrâ, rectricis extimæ pogoniis albo bis maculatis: fasciâ mystacali et alterâ triangulari ad latera colli positâ nigris: corpore subtùs lactescenti-albo, abdomine imo crissoque coccineis: subalaribus albis: rostro plumbescente, mandibulâ paullò flavicante: pedibus plumbeis: iride rubrâ.

♀ mari similis: sed pileo toto nigro.

♂ *juv.* sordidior et adultis distinguendus vertice coccineo, occipite nigro, torque pectorali coccineo et lineis longitudinalibus fuscis pectoralibus, remigibus etiam albo terminatis.

Adult Male. Glossy black above; occiput crimson; forehead and sides of the face silky white, with a creamy appearance on the former; a black malar stripe extending from the base of the bill, and joining another, triangular patch on the sides of the neck, extending in a half circle down on to the breast; scapulars white; wing-coverts black, the inner greater ones white, forming with the scapulars a very large shoulder-patch; quills black, the primaries brownish towards the tip, the outer and inner webs spotted with white, spots decreasing in number towards the secondaries; tail black, the two outer tail-feathers marked with four spots of yellowish white, two on each web; under surface of the body creamy white, with a small crescent-like patch on each side of the chest; the abdomen and vent pale rose-colour; under wing-coverts white; bill bluish, the under mandible yellowish at the base; feet lead-colour; iris reddish. Total length 9·4 inches, culmen 1·3, wing 5·1, tail 3·5, tarsus 0·85.

Adult Female. Exactly similar to the male, but has the head all black with no crimson occipital crest.

Young. Similar to the adults as regards the distribution of colours, but more fluffy in plumage, and with

rather shorter bills. The points in which they further differ are the following. Instead of having the crown black, with a red occipital crest, as in the adult male, or wholly black, as in the female, the forehead is dull buff, the fore part of the head crimson, and the occiput black. The quills have all conspicuous white tips; and the penultimate tail-feather is also spotted with the latter colour; but the chief distinction lies in the crimson band which extends across the chest, which is likewise narrowly striped with dusky black. Total length 8 inches, culmen 0·95, wing 4·85, tail 3·0, tarsus 0·85.

Obs. It will perhaps be a matter of surprise to ornithologists that we have united, without a query, *Picus feliciæ* and *Picus syriacus*; but the possibility of such a conclusion has been foreshadowed by Professor Sundevall (Consp. Pic. p. 23), who, however, at that time had not personally examined *Picus feliciæ*. Messrs. Cabanis and Heine have actually placed the two birds in different *genera*, an arrangement acquiesced in by Mr. G. R. Gray in the 'Hand-list' (ii. p. 182). According to these principles of classification, the young of *Picus major* would be placed in a different genus from the old bird; and it can hardly be doubted that an arrangement which would bring about such a conclusion must be very artificial. On the other hand, however, we have in Professor Sundevall's admirable synopsis a much better classification of the Pied Woodpeckers, and one which seems to us to be in strict accordance with their natural affinities: thus the character of chief importance is considered to be the presence or absence of the black line of feathers which crosses the sides of the neck behind the ear-coverts, a peculiarity possessed by all the species of the *P. major* group, but wanting in both *P. syriacus* and *P. feliciæ*, which have the cheeks and sides of the neck uninterruptedly white. This common character brings the two last-named species at once into close proximity; and the following observations will, we trust, serve to prove that they are not really separable. The points of difference have been stated above in the descriptions of the old and young birds; and a very little reflection is necessary to perceive that the young bird of *Picus feliciæ*, supposed to be at present unknown, must be marvellously like *P. syriacus*. On the other hand this latter bird has a red line across the breast, which has always been considered a mark of maturity. This would seem to indicate clearly that there are two species, differing in constant characters, each confined to a particular locality; but this is not in reality the case. We have now before us the type of Antinori's *Picus cruentatus* (kindly lent us by Count Salvadori from the Turin Museum), which is from Syria, has the red band on the breast, and agrees in every particular with examples collected at Smyrna by Dr. Krüper, and labelled by him as *young* birds. Then, again, the typical specimen of *Picus syriacus*, described by Messrs. Hemprich and Ehrenberg, from Mount Lebanon, is distinctly stated to have the red on the chest; so that there can be little doubt that *Picus cruentatus* is positively identical with *P. syriacus*. It is a curious fact that Antinori was two years before he could procure old birds of his *P. cruentatus*; and from a perusal of his descriptions we are now of opinion that the specimen which he calls the adult was really nothing more than a young male in a state of change; the iris, too, which is stated to be nut-brown in colour, is also a sign of immaturity. It now remains to unite *Picus cruentatus* vel *syriacus* with *P. feliciæ*. Malherbe has figured both species; and it was from a comparison of the plates alone that Professor Sundevall was led to a suspicion of their identity. They both occupy the same area; for Professor Newton has kindly examined the specimen brought back by Strickland from Smyrna (s. n. *P. major*), and tells us that it is certainly *P. feliciæ*. "The specimen," he writes, "is labelled a female, and there is no red band on the breast." This shows that the bird is fully adult; and the coexistence of *P. feliciæ* and *P. syriacus* at Smyrna is established; while its range to the southward, as far as Palestine, is proved by the large series of specimens brought back by Canon Tristram from that country. And it extends to the eastward as far as Persia; for here De Filippi met with it, and named it *Picus khan*; but Count Salvadori has examined the type specimen and confirmed its identity with *P. syriacus*. Among Canon Tristram's Palestine examples is a skin of an adult male which exhibits slight remains of a red

chest-band; and this we think clearly shows that *P. syriacus* is the young of *P. feliciæ*, the red on the breast disappearing with age. The former name, though founded on the young bird, must be employed.

Explanations of the Plates. In order to afford a better appreciation of the facts above mentioned, we have deemed it advisable to give two Plates to illustrate the present species. On the first will be seen figures of a pair of adult birds from Canon Tristram's collection, the female being the bird spoken of as exhibiting a tinge of red on the breast. In the second Plate are figured two young specimens—one of them being Antinori's type of *Picus cruentatus*, the other representing a bird sent from Smyrna by Dr. Krüper, and received by us through Mr. Schlüter. It will be seen that the species is distinguished from *P. major* by the uninterrupted white cheeks, which have no black bar behind the ear-coverts. The young birds, on comparison with *P. medius*, will be seen to differ at first sight in wanting the black bar above mentioned.

The above *résumé* of the scientific relations of the present species leaves us very little to say; for with regard to its distribution and habits not much has been recorded. Canon Tristram, in his essay on the Ornithology of Palestine, says:—"Wherever we found the Jay, the Woodpecker was invariably in its company—in habits, flight, and voice precisely like our *Picus major*, with which it is so closely allied as not to be easily distinguishable at first sight. . . . . The Woodpecker is a permanent resident, found alike in the olive-yards near Hebron, and in the pine-forests of Gilead, but especially abundant about Carmel and the oak-glades of Bashan. It never descends to the Ghor or Jordan depression." Hemprich and Ehrenberg discovered the bird originally in Mount Lebanon; and the Marquis Orazio Antinori, who describes what we take to be the young of this species, under the name of *Picus cruentatus*, has given the following notes respecting it:—"In August 1853 I first observed this species in the gardens of Damascus, where it was numerous, owing to the large numbers of fruit-trees, especially plums and cherries and at least nine sorts of apricots, which, during the whole summer, produce excellent fruit. From this circumstance I proposed to call it *Picus damascensis*; but as I subsequently found it distributed all through Syria, and also in Anatolia, in the southern provinces of which country, near the sea, I found it tolerably abundant, I preferred to substitute the name of *cruentatus*, from the characteristic blood-red spot on the breast. In its habits this species is much quieter than its congeners, as it does not affect solitude so much, frequents inhabited localities, and is never met with in large forests. It affects fruit-trees, where it finds numbers of ants, which are attracted by the sweet juices of the fruit. Its voice resembles that of *P. major*; but it is not so noisy. In August last year I met with young birds at the Turkish cemetery of Scalanuova, and surmise that it had been nesting in the old *Pistacia terebinthus* trees, which there grow very large; but I never succeeded in procuring the eggs. The Syrian Arabs call it *Nacar-el-Hairel*."

Dr. Krüper has sent specimens from the neighbourhood of Smyrna, and writes to us:—"This species inhabits the plains near Smyrna, and hews out its nest-hole in all sorts of trees; this year I found two nests in mulberry-trees, containing incomplete sittings of eggs, three and five respectively in number."

Malherbe received specimens from Kurdistan; and it ranges into Persia, where it was redescribed by the late Professor De Filippi as *Picus khan*. Count Salvadori tells us that this species is nothing but *P. syriacus*.

In Dresser's collection are four eggs of this species, collected by Dr. Krüper, near Smyrna, on the 3rd and 12th of May, 1871, and marked by him *Picus cruentatus*. In colour and texture they closely resemble eggs of *Picus major*, and measure from $1\frac{1}{40}$ by $\frac{32}{40}$ to 1 inch by $\frac{29}{40}$ of an inch.

The descriptions and figures of the adult pair of birds are taken from specimens lent to us by Canon Tristram, the young ones being in our own collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Syria (*Boucard*). *b, c, juv.* Smyrna, June 22nd and July 4th, 1871 (*Dr. Krüper*).

E Mus. De Selys-Longchamps.

a, juv. Smyrna (*Dr. Krüper*).

E Mus. H. B. Tristram.

a, b, ♂, ♀. Palestine, December 19th, 1863, and March 18th, 1864 (*H. B. T.*).

E Mus. Lord Lilford.

a, b. Palestine, April 1864 (*H. B. Tristram*).

E Mus. Aug. Taurin.

a, ♂. Syria (*Antinori*).



WHITE BACKED WOODPECKER.

PICUS LEUCONOTUS.

5I

PICUS LEUCONOTUS.

(WHITE-BACKED WOODPECKER.)

Picus leucotos, Bechst. Orn. Taschenb. p. 66 (1802).
Picus leuconotus, Bechst. Naturg. Deutschl. ii. p. 1034 (1805).
Dendrodromas leuconotus, Kaup, Natürl. Syst. p. 142 (1829).
Picus cirris, Pall. Zoogr. Rosso-Asiat. i. p. 410 (1831).
Pipripicus uralensis, "Malh.," Bonap. Consp. Vol. Zyg. p. 8 (1854).
Picus uralensis, Malh. Monogr. Picid. i. p. 92, t. 23. figs. 4–6 (1861).
Pipripicus leuconotus, Bonap. Consp. Vol. Zyg. p. 8 (1854).
Picus polonicus, Brehm, Vollst. Vogelf. p. 69 (1855).

Der weissrückige Specht, German; *Hvitryggig Hackspett*, Swedish; *Hvidrygget Flagspet*, Norwegian.

Figuræ notabiles.

Bechst. Naturg. Deutschl. ii. t. 25. figs. 1, 2; Naum. Vög. Deutschl. v. Taf. 135. figs. 1, 2; Gould, B. of Eur. iii. pl. 228; Bree, B. of Eur. iii. p. 142; Malh. Monogr. Picid. iii. tab. 23.

♂ *ad.* fronte lutescente: pileo summo lætè scarlatino, nigro utrinque marginato: cristâ occipitali nigrâ ad dorsum vix conjunctâ: facie laterali albâ usque ad latera colli dilatatâ et torquem collarem interruptam formante: genis nigris pone regionem auricularem dilatatis et usque ad latera pectoris extensis, plagam crescentem duplicem pectoralem formantibus: dorso toto superiore nigro: dorso postico et uropygio purè albis, vix nigro notatis: supracaudalibus nigris: scapularibus albis extùs paullò albo variis: tectricibus alarum nigris, majoribus latè albo terminatis, fascias duas conspicuas formantibus: remigibus nigris, versus apicem brunnescentibus albo terminatis, utrisque pogoniis albo maculatis et secundariis albo transfasciatis: caudâ nigrâ, rectrice extimâ albâ nigro transfasciatâ, penultimâ ad basin nigrâ, versus apicem albâ nigro transfasciatâ, tertiâ nigrâ versus apicem albo maculatâ et ad apicem albâ unicè nigro transnotatâ: gutture et pectore antico albo paullò flavicante: pectore imo et abdomine medio cum subcaudalibus pallidè miniatis: hypochondriis flavicanti-albidis: corpore laterali striis nigris distinctè lineatis: subalaribus albis nigro variis: rostro cyanescenti-corneo: pedibus plumbeis: iride brunneâ.

♀ *ad.* mari similis sed capite nigro nec scarlatino distinguenda.

♀ *juv.* capite pallidè miniato, corpore subtus vix miniato tincto.

♂ *juv.* similis mari adulto, sed coloribus ubique dilutioribus, præsertim abdomine pallidè miniato.

Adult Male. Forehead buffy white; crown of the head to the nape scarlet; sides of the face white, extending backwards on to the sides of the neck, where it forms an interrupted collar, intercepted by an occipital crest of black; cheeks black, extending backwards in a broad line, widening out behind the ear-coverts, and running down each side of the neck on to the breast; upper portion of the back glossy

black, lower portion white, varied a little here and there with black markings; upper tail-coverts black; scapulars black, becoming white towards the tip; wing-coverts black, the greater ones marked with a very distinct white spot near the tip of the feather, forming a double alar bar; quills brownish black, a little paler towards the tips, spotted on both webs with white, the innermost secondaries barred across with the same colour; tail black, the middle feathers entirely so, the three outer rectrices barred and spotted with white, the external ones especially so, so that they appear quite white with black transverse bars; throat and centre of the chest yellowish white; upper part of the breast whitish, becoming gradually tinged with vermilion towards the abdomen and under tail-coverts, which are entirely of this colour; the sides of the body for the whole length longitudinally striped with distinct lines of black; under wing-coverts varied with black and white; bill horn-blue; feet leaden grey; iris nut-brown. Total length 10·3 inches, culmen 1·5, wing 5·7, tail 3·7, tarsus 1·0.

Adult Female. Exactly similar to the adult male in most respects, but at once to be distinguished by its black crown. The black behind the ear seems also to be more plainly developed, and in one specimen we have examined actually connects the cheek-stripe with the crown. Total length 10 inches, culmen 1·3, wing 5·7, tail 3·7, tarsus 1·0.

Obs. The young of both sexes in their first plumage have red on the head. In the males the base of this part is of a blackish ash, much deeper than in the adult bird, and it is covered by the points of the feathers, which are of a pale red, this becoming yellowish at the extreme hinder part. In the female the red is paler and more yellowish, and does not extend so far on the nape. Besides this, they differ from the adult birds in wanting the red on the belly, of which, however, a trace remains on the under tail-coverts. The flanks are greyish, with the striations larger, paler, and less defined than is the case in the adult birds. The extremities of the primaries are edged with white along the entire breadth. (*Dr. Taczanowski, in epist.*)

The true *Picus leuconotus* has a very peculiar range, being found only in Northern and Central Europe. In Siberia the bird varies somewhat, but in our opinion is not to be specifically separated; for the characters given by Professor Sundevall (in his admirable synopsis of the Woodpeckers) for this bird, which he rightly considers to be nothing more than an eastern form of the ordinary species, do not hold good in a pair of Japanese birds collected by Mr. Whitely, and lent to us by Mr. Gould. According to Professor Sundevall, the Siberian bird is a little larger than the European White-backed Woodpecker, and has the white broader and the black narrower, the stripes on the side of the belly less distinctly pronounced; the black bars on the tail also are narrower, and partake more of the character of spots; and sometimes also the fourth tail-feather is marked with white. The Japanese birds, however, before alluded to, do not show these differences when compared with Swedish examples; for the stripes on the flanks are broader, and the white on the wings is narrower, while there is not the slightest difference in the markings of the tail, the fourth rectrix being unspotted. Dr. von Schrenck states that the specimens collected by him in the Amoor country agreed exactly with European specimens, except as regards the markings on the tail, two of the Siberian birds having the two central feathers of the tail black and unspotted, and the two next also, while on the third feather there is only a small yellowish spot near the apex. Under these circumstances, therefore, we have not considered *Picus cirris* to be a distinct species from *P. leuconotus*.

A real difference, however, exists in the White-backed Woodpecker from South-eastern

Europe, which constitutes a distinct species: this we propose to call *P. lilfordi*, after Lord Lilford, who first drew our attention to the characters in which the birds differed. Instead of having the back white, as in the Swedish species, it is broadly barred across with black; and the crown of the head is of a different crimson in the bird from Greece. The Plates, however, will best illustrate the distinctive characteristics of the two birds.

The White-backed Woodpecker appears to be quite unknown in Denmark, the Low Countries, and the greater part of France, as well as Italy and Spain; nor has it yet occurred in the British Islands. Mr. R. Collett, in his work on the birds of Norway, writes:—"It breeds all over the lower part of the provinces of Christiania and Hamar, in some places numerously, as at Smaalehnene, Egnene, about the Skiensfjord, and on Hedemarken. It seems, however, to be most numerous in the southern part of the province of Trondhjem, where, in the Œrkedal and Surendal, it is the commonest species. To the westward it is found as far as Nedenæs, in the province of Christiansand, but is not known in the western part of the country." "This bird," writes Nilsson, "is found sporadically on our peninsula, and belongs more to the northerly part than the high north or south. In the dense pine-forests of Upper Wermland I found it common; and it is said to be the same in Northern Upland. I also met with it in the pine-forests of Hallingdal, in Norway, nearly as far as Aal. In Södermanland it is rare, and only occasionally seen in the winter. In the northern, and more particularly the north-eastern, parts of Småland it is not uncommon. It is found breeding on Gottland (Wallengren). In Skåne it is rare, but has been shot there in the summer, as, for instance, in the Tinnans forest, below Osbyholm, in the middle of May; and I have once seen one here at Lund, in a garden, in the middle of December." Herr Magnus von Wright says that it occurs often near Kuopio, in Eastern Finland, but is rare in the southern parts of that country. Dresser during his sojourn there only saw it on two occasions near Björneborg, in Northern Finland, and could never hear of it further north. In Livonia it is, according to Meyer, found not uncommonly, and visits gardens and places in the neighbourhood of houses. We have an example in our collection from the neighbourhood of Moscow; and an excellent account of the species in Poland will be found below from the pen of Dr. Taczanowski. Borggreve says it is very rare in Eastern Germany, and doubts Gloger's statement that it is common in Prussia and Silesia, or nests there. "Only one specimen is in the Königsberg Museum. In Böck's collection there is not a single one. It has been once recorded from Bohemia, and once from Mecklenburg; and two have been procured at different times at Neustadt-Eberswald." Dr. Anton Fritsch records it as having been several times captured in Bohemia; and Ritter von Tschusi procured a male bird in the Arnsdorf mountains, in Southern Austria. According to Degland and Gerbe it frequents the forests adjoining Urdos, in the Hautes-Pyrénées, where it breeds. M. Loche procured both adult and immature birds from thence.

For the exact determination of its eastern range in Europe we must await future researches; for the bird from Turkey is *P. lilfordi*, and we suspect that the Woodpecker which Professor von Nordmann refers to as occurring in Southern Russia, but which has not yet been observed to the eastward of Bessarabia, also belongs to the latter species. We must mention, however, that the Woodpecker from the Volga is the true *Picus leuconotus*, as we have ascertained by the examination of specimens in the collection of Mr. Edward Hargitt.

The following observations probably refer to the Siberian form of *P. leuconotus* above referred to. Messrs. Dybowski and Parvex record it from Dauria as rare in the forests (at Darasun), commoner in the forests of the Onon. Dr. G. Radde gives the following note:—"Certainly inhabits all the wooded country in Southern Siberia, in winter, like most other Woodpeckers which change their habitat as partial migrants. Although we observed it in the conifer woods at Lake Baikal in winter, we never saw it there in summer. It probably breeds not uncommonly in the Bureja Mountains;" and Dr. von Middendorff says:—"I saw it on the Ischim steppe, and on the highest point of the Stanowoi Mountains on the 31st of May." Dr. L. von Schrenck writes:—"*P. leuconotus*, which, according to Pallas, extends throughout Siberia to Kamtschatka, is found during the whole year in the Amoor country in the green woods, and particularly on the willow-covered islands on the Amoor river. I found it in December near the Nikolajevsk post; and Mr. Maximowicz shot it in October and November at the Mariinski post." Mr. Whitely says it is "by no means scarce in the forests near Hakodadi. I shot several specimens of it in October and November 1865."

For the accompanying original account of this species we are indebted to the kindness of our friend Dr. Taczanowski:—"The White-backed Woodpecker is found everywhere in the Kingdom of Poland, but is not numerous—indeed, in general, is less common than *Picus medius*. It inhabits the green-wood forests, especially those which contain birch, oak, and elm trees, but is not found in conifer woods. It is the least noisy and the most phlegmatic of our Woodpeckers, quieter in its movements; and its note is softer than that of the others. It will remain sometimes for hours on the same tree, climbing about quietly and searching silently for insects. Although its beak is stronger than those of the other Spotted Woodpeckers, it does not make so much noise in tapping on the trees; for it works quietly, and generally on very rotten trees, where it only shells off the bark. In winter it is often found in gardens and in the villages, where it will sometimes spend whole days, only visiting a few trees or hedges; it stands in far less fear of man than its congeners. During the breeding-season it makes the noise which is common to all our Woodpeckers, by tapping rapidly on a dry branch; but it is not so loud as that of the others, and cannot be heard at any distance. It feeds exclusively on insects. In nidification it generally precedes the Great Black Woodpeckers (*Dryocopus martius*) by a few days, laying as early as the beginning of April; and by the middle of May the young quit the nest. It makes its nest-hole in very rotten trees, especially in birches, ash trees, elms, and, but rarely, in oaks, most generally in the trunk of the tree, about two or three fathoms from the ground. It generally chooses trees so rotten that they are only held together by the bark. It once happened to me that on slightly shaking an old trunk which contained young of this bird, and which had been used for the purpose of nidification for the two or three preceding years, it broke, and literally fell in pieces. The nest of this Woodpecker can easily be recognized by the shape of the exterior opening, which is perfectly circular all along the horizontal passage; whereas those of the other species are elliptical at the beginning, and, after that, circular to a certain distance from the bottom. The interior is far more spacious than in those of *Picus major*, and even sometimes exceeds that of the Green Woodpecker. The *débris* of wood thrown out at the foot of the tree is larger than is the case with the other species; and this also serves to point out its nest. They generally deposit two or three eggs; I only know of one instance when four were laid; and it is therefore

easy to see how this species is less numerous than the others. The eggs are exactly like those of *Picus major*, and also vary very much in form, some being much elongated, and others very short."

Respecting its habits in Sweden, Nilsson says:—"This species prefers the plains to the hill country, and affects deep woods where old rotten pine trees are found. In its habits it resembles the other Spotted Woodpeckers; and its note is nearly the same as that of *Picus major*. It is not particularly shy; but amongst high trees it generally keeps to the upper parts. In the summer season it is generally found in pairs, and in families during the autumn and winter." Mr. R. Collett, of Christiania, writes to us that it is annually taken in snares set for Thrushes and baited with berries of *Sorbus*, remarking at the same time that most of the Woodpeckers eat vegetable matter in the autumn.

In Dresser's collection is a single egg, received by him from Dr. Baldamus, and said to be of this bird, taken in Switzerland. In size it measures $1\frac{3}{40}$ by $\frac{31}{40}$ inch, and is pure glossy white like the egg of the Greater Spotted Woodpecker.

The descriptions and figures of the adult birds are from two beautiful Swedish specimens, prepared by Mr. Meves, in our own collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, b. Sweden (*W. Meves*). *c.* Sweden (*Moeschler*). *d.* Sweden (*A. Benzon*). *e.* Galicia (*W. Schlüter*). *f.* Moscow (*Dode*).

E Mus. Howard Saunders.

a. Sweden (*Moeschler*).

E Mus. Lord Lilford.

a, b, c. Sweden (*Wheelwright*).

E Mus. E. Hargitt.

a, b. Volga (*Moeschler*).

E Mus. J. H. Gurney, jun.

a. Russia (*Dode*).

E Mus. Lord Walden.

a, b. Sweden (*Wheelwright*).

E Mus. H. B. Tristram.

a. Gottland, Sweden. *b.* Sweden (*Wheelwright*).



GRECIAN WOODPECKER.
PICUS LILFORDI.
82

PICUS LILFORDI.

(GRECIAN WOODPECKER.)

Picus lilfordi, Sharpe and Dresser, Ann. Nat. Hist. (4) viii. p. 436 (1871).
Picus leuconotus, Lilford, Ibis, 1860, p. 234 (nec Bechst.).

♂ *ad.* pileo lætè coccineo : fronte, supercilio, facie et collo laterali lactescenti-albis: genis nigris, infrà in lateribus pectoris decurrentibus, suprà vix ad occiput ponè regionem paroticam conjunctis, itaque plagam nigram triquetram formantibus : dorso superiore nigerrimo : scapularibus et dorso postico toto alternè nigro alboque transfasciatis : uropygio imo et supracaudalibus nigris : tectricibus alarum nigerrimis, minimis dorso concoloribus, medianis et majoribus ad apicem albo maculatis, fascias alares formantibus : remigibus nigris, extùs et intùs albo maculatis, et pogonio externo ad apicem ipsum albo notatis : caudâ nigrâ, versus apicem plus minusve brunnescente, rectricibus tribus externis albo fasciatis, tertiâ minùs distinctè transnotatâ, potiùs maculatâ : subtùs lactescenti-albus, abdomine et subcaudalibus coccineis : pectore superiore clariùs lactescente, hôc et corporis lateribus nigro distinctè lineatis : subalaribus albis, imis nigro notatis : rostro et pedibus plumbeis : iride rufescente.

♀ mari omninò similis : pileo nigro : subtùs vix ità distinctè striata.

♂ *juv.* similis mari adulto, sed paullò obscurior, coloribus dilutioribus : pileo et abdomine pallidè miniatis.

Adult Male. Top of the head rich crimson; forehead, feathers round the eye, and ear-coverts yellowish white, the front of the head generally inclining to chestnut, probably the result of a stain; cheeks blue-black, extending backwards on to the sides of the neck, joining a crescent-shaped patch, which widens out and extends upwards to the crown, uniting with the latter behind the ear-coverts and spreading downwards on to the sides of the chest; sides of the neck yellowish white; interscapulary region glossy blue-black, the rest of the back alternately crossed with broad bars of black and creamy white; upper tail-coverts black; scapulars barred in the same manner as the lower back; wing-coverts glossy blue-black, the greater ones marked with a white spot near the tip, forming a very conspicuous bar across the wing; quills black, with very distinct white spots on both webs, and tipped with white on the outer web; spots on the secondaries larger, and taking more the form of bars; tail-feathers black, the tips brownish, the three outer feathers barred with white, decreasing in number and regularity towards the third feather, which is only spotted with white; under surface of the body creamy white, with a rufous shade on the throat and fore neck; sides of the breast and flanks very distinctly striped with black; abdomen and under tail-coverts deep vermilion; under wing-coverts whitish, with large black spots on the lower ones; bill and feet lead-colour; irides reddish. Total length 10·5 inches, culmen 1·6, wing 5·2, tail 3·8, tarsus 1·0.

Female. Exactly similar to the male, but the stripes on the lower parts not quite so distinct, and always to be distinguished by the absence of the crimson crown, this part being blue-black like the rest of the back.

Younger Male. The black scarcely so glossy as in the old bird, and the white not so creamy in appearance. The red on the head and belly is very much paler, and inclines to vermilion.

The Grecian Woodpecker is closely allied to the northern *Picus leuconotus*, and has, until recently, been considered identical with that species. It has fallen to our lot, however, to

establish the differences between the two birds; and the universal acceptance by competent ornithologists of our views on this point has convinced us of the correctness of our identification. Nor have we been without ample material; for we have now before us no less than nine individuals of *P. lilfordi*, and a large series of *P. leuconotus* for comparison, and the differences are sufficiently clear at the first glance. Besides being a more strongly marked bird, the southern species is at once distinguished by the barred appearance of the lower back and rump, and by the crimson crown. The points of difference between the two species are well shown by Mr. Keulemans in the Plates which accompany the respective articles.

But little has been recorded on the habits and economy of the present species; but they are doubtless similar to those of its close ally. Lord Lilford sends us the following note:—"I met with this species in the high woods in the valley of Vrana, near Butrinto, in Epirus, in the winter of 1857–58. It is not uncommon there, but very difficult to approach. The note of this bird at that season very much resembles that of *Picus major*, a loud single 'twit,' repeated at short intervals. I never heard it produce the jarring noise so often heard from the Greater and Lesser Spotted Woodpeckers." Lindermayer writes:—"Rare in Greece; found in the forests of Rumelia which skirt the Lake of Vrachori, in Akarnania, and in the woods on Mount Œta. In a letter Dr. Krüper informs us that it is more common on Mount Olympus than anywhere else, but is found both on the mountains and plains of Greece, being occasionally met with at Lake Vrachori and on Mount Parnassus."

Messrs. Elwes and Buckley did not procure it themselves in Turkey, but noticed it in Mr. Robson's collection; and from the latter gentleman we have received a specimen killed in that country exactly agreeing with our typical specimens of *P. lilfordi*. Again, it is probably this species which Von Nordmann refers to when he speaks of *P. leuconotus* occurring in Southern Russia but not extending eastwards of Bessarabia; subsequent research, however, is necessary to determine the exact extent of its range.

In naming this bird after Lord Lilford, who discovered the original specimen in Epirus, we desire to acknowledge the great assistance which he has rendered us in the preparation of the present work, while it needs no further testimony of ours to increase the admiration in which he is held by all ornithologists for the never-failing aid which he is always ready to accord whenever the interests of science can be in any way promoted.

Our description and measurements, as well as the figures in the Plate, are taken from a pair of specimens in our collection, procured by Dr. Krüper on Mount Olympus. The chestnut colouring generally apparent on the forehead and throat of some individuals is doubtless owing to a stain.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Bergasskeuy, Europe, January 8th, 1871 (*T. Robson*). *b, c, d, e, f, g, h*. Macedonia, August 21st, October 17th and 21st, November 29th, and December 22nd, 1869 (*Dr. Th. Krüper*).

E Mus. Lord Lilford.

a. Valley of Vrana, Epirus, March 5th, 1857 (*L.*).



MIDDLE SPOTTED WOODPECKER.

PICUS MEDIUS.

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PICUS MEDIUS.

(MIDDLE SPOTTED WOODPECKER.)

Picus medius, Linn. Syst. Nat. i. p. 176 (1766).
Dendrocopus medius, Koch, Syst. d. Baier. Zool. p. 73 (1816).
Picus cynædus, Pall. Zoogr. Rosso-Asiat. i. p. 413 (1831).
Picus quercuum, Brehm, Vög. Deutschl. p. 191 (1831).
Pipripicus medius, Bonap. Consp. Vol. Zyg. p. 8 (1854).
Picus roseiventris, Brehm, Vollst. Vogelf. p. 70 (1855).
Picus meridionalis, id. tom. cit. p. 70 (1855).
Dendrocoptes medius, Cab. & Heine, Mus. Hein. Th. v. p. 41 (1863).

Pic mar, French; *Pico*, Spanish; *Pica-pau malhado*, Portuguese; *de middelste Bonte Specht*, Dutch; *der Mittelbuntspecht*, German; *Mellauspet*, Swedish.

Figuræ notabiles.

Buff. Pl. Enl. vii. pl. 611; Naum. Vög. Deutschl. v. Taf. 136, figs. 1, 2; Gould, B. of Eur. iii. pl. 230; Kjærb. Orn. Dan. pl. x.; Schl. Vog. Nederl. pl. 52; Malh. Monogr. Picid. xx. figs. 6, 7, 8; Bree, B. of Eur. iii. p. 146.

♂ *ad.* pileo miniato, fronte fulvescente: facie laterali cum colli lateribus albidâ, regione auriculari paullò cinerascente, genis magis fulvescentibus: plagâ nigrâ subtriquetrâ ad latera colli ima positâ, à genis posticis extensâ ad caput summum vix conjunctâ: dorso toto nigro, uropygio magis cinerascente: scapularibus albis, plumarum parte basali nigrâ: tectricibus alarum nigris, medianis versus apicem albis, intimis ferè omninò albis, plagam magnam formantibus: remigibus nigris, extus albo conspicuè maculatis fascias distinctas formantibus: caudâ nigrâ, rectrice extimâ albo fasciatâ, penultimâ irregulariter albo notatâ, proximâ tantum versus apicem albo maculatâ: gutture toto albo: pectore laterali plagâ crescente nigrâ notato, pectore summo fulvescente: ventre toto pulchrè miniato: corpore subtus laterali nigro distinctè striato: subalaribus albis, nigro paullò variis: rostro cyanescente, ad basin pallidiore: pedibus plumbeis: iride rufescente.

♀ mari similis, vix dilutior, plagâ pectorali nigrâ vix ita distinctâ.

Juv. similis adultis, sed ubique dilutior: ptilosi lanuginosâ: pileo postico nigricante vix miniato tincto: subtus flavicans, abdomine pallidè miniato.

Adult male. Crown of the head beautiful vermilion, the forehead buffy white; feathers round and above the eye and the sides of the face generally white, slightly tinged with grey on the ear-coverts, and with pale brown on the cheeks; on the sides of the neck a kind of triangular patch of black, which reaches from the hind part of the cheeks on to the sides of the chest, and also extends upwards behind the ear-coverts, nearly joining the crown, in some specimens apparently quite doing so; nape and entire back deep black, a little inclining to grey on the rump; scapulars white, the basal portion of the feathers, which is concealed, blackish; wing-coverts black, some of the innermost greater and median coverts white at

the tip, forming a large white patch, which is continuous with the white scapulars; quills brownish black, spotted on the outer web with white, forming on the secondaries four bars across the wing; tail black, the outer feather banded with white, the next irregularly spotted, and the third merely edged at the tip with white; throat white; chest yellowish, bordered on each side with a distinct crescent-like line of black, which nearly join in the centre; rest of the belly and abdomen beautiful rose-colour; the sides of the body very distinctly striped with black; under wing-coverts white, varied with black; bill bluish lead-colour, paler at the base; legs lead-colour; iris cinnabar-red. Total length 8·5 inches, culmen 1·0, wing 4·8, tail 3·3, tarsus 0·8.

Female. Exactly similar to the male, but with the pectoral crescent-like band not so fully developed, and the colours in general not quite so bright.

Young. Exactly similar to the adults, but the colours not nearly so bright; the back tinged with brown, and the crown of the head not entirely vermilion, but rather blackish with a slight tinge of the latter colour; the whole plumage very woolly; throat whitish; breast light yellow, gradually shading into pale vermilion on the abdomen and under tail-coverts.

Obs. A young nestling male resembled the old birds, but, except the wings, all the white in its plumage was tinged with sulphur-yellow. The shaft-markings and the underparts were not clear, and the red on the head and about the vent was paler. The old birds had the iris reddish, the young bird brown (*W. Meves, in epist.*)

The present species, which is one of the handsomest Woodpeckers in the world, is pretty generally distributed over Europe, and does not seem to be migratory to any great extent.

Mr. Harting has included it in his 'Birds of Middlesex,' on the authority of Mr. Spencer, whose evidence on the point, however, fails to convince us; and we do not consider that as yet the Middle Spotted Woodpecker has any claim to be considered British. In Denmark, Kjærbölling says it is a "resident and partial migrant in Denmark, rarer in northern Jutland than in the southern provinces." A note on its occurrence in Denmark has been sent us by Mr. A. Benzon, and will be found below. Nilsson states that it "occurs only in southern Sweden, never in the north; in Skåne it is tolerably abundant." Mr. Meves writes us word that he saw it at Stekag, where it was not rare. Collett observes in his 'Birds of Norway':—"Nilsson states that *P. medius* has been killed in Norway; but the specimen in question, shot near Christiania, has since proved to be a young bird of *Picus major*." In Finland or the Baltic Provinces it has not yet been known to occur.

Naumann says that "in Prussia it is occasional, in some parts of Germany very common, in others less so; but it is pretty generally distributed throughout the country. In Anhalt it is nearly as numerous as the Great Spotted Woodpecker, in some of the green woods even commoner." He further states that it is found in England, which, however, is not the case. "In Holland," Mr. H. M. Labouchere writes, "this bird has been observed a few times near the German frontier." It is very rare in Belgium, according to Baron de Selys-Longchamps, where it is only found in the large oak-forests of the Ardennes. De la Fontaine writes:—"Not common in Luxembourg, although it nests regularly, and is found from the forests of Ardennes to those on the Moselle and the Basse-Sûre." Godron says it is common in the woods along the chain of the Vosges, and rare in the rest of Lorraine. Degland and Gerbe observe that it is

"commoner in the south than in the north of France; still it is not rare in Lorraine. Mr. J. Hollandre says that it is more particularly found in the oak-forests of Merten, near Saint Avond, and near Sarrelouis." Messrs. Jaubert and Barthélemy Lapommeraye likewise remark concerning the present species:—"Common in France, though not found everywhere. We sometimes see it at Marseilles, on passage, about the end of September; but besides that it is only found in some parts of the Department of Var. It is sedentary in the chain of the Maures and in the woods of Estérel, whence our friend M. Arquier has often procured the bird and eggs. It has, however, not been observed in the Basses-Alpes." Bailly states that it is found only rarely in Savoy, but remains there throughout the year. It is more often seen towards the spring during intense cold, in the small woods and parks, and particularly amongst the chestnut-trees. He further states that it has been procured or observed at Bissy, St. Sulpice, Vimines, near Chambéry, Pussy, Bonneval, and Tarantaise. Canon Tristram informs us that about twenty-five years ago he shot a specimen at Vevay, on the Lake of Geneva. In his paper on the Birds of Southern Spain, Mr. Howard Saunders observes:—"Guirao considers this species even more abundant in Murcia than *Gecinus viridis*, especially in the pine-woods of the Sierras de Espuña and de la Pila. I never obtained it myself, but have handled specimens." In Portugal, according to Mr. A. C. Smith, it is "said to be common." It occurs in Italy, but is not common, being probably only found in the forests of the northern portion of that country. In Malherbe's book the present species is spoken of as "not common in Sicily." We are sorry to say that the statements of this author with regard to Sicilian birds cannot be trusted; and Professor Doderlein, a much higher authority, is not yet certain, from personal observation, of its occurrence in Sicily, although it is mentioned in the appendix to Minà's catalogue of the birds of the Madonie. Captain Sperling remarks:—"The only bird of this species that ever came under my observation was shot by a companion in an olive-tree in Santa Maura. I do not think it has ever been observed in the Ionian Islands before." In Greece it is probably a local bird, as it is not mentioned by Lindermayer or Von der Mühle; but Dr. Krüper has forwarded specimens from Ætolia and from Macedonia, where it apparently breeds, to judge from a young specimen procured by that celebrated collector in that locality. Messrs. Elwes and Buckley likewise state that they found it "common in Macedonia, and near Constantinople, frequenting gardens and open country in preference to the deep forest." Mr. Robson also kindly sends us a note:—"This species is not so numerous in Turkey in Europe and Asia Minor as the *Picus major*. They are found in similar localities, and though not so abundant, are not difficult to procure in the old forests of Asia Minor and Europe. They are lively, active, shy birds, and are constant residents in Turkey." Professor von Nordmann says the Middle Spotted Woodpecker is "found singly in Bessarabia and the Crimea, and has been killed once in the winter near Odessa." In Western Russia, Pallas states that it is as common as in the rest of Europe, but never procured further to the east, nor in Siberia. Mr. Keith Abbott met with it at Trebizond.

Naumann gives an excellent account of its habits:—"Although both this bird and the Great Spotted Woodpecker frequent the same sort of country, it is easy to see that they affect different kinds of woods, the latter bird preferring the conifer-growth, whereas the present species keeps more to the non-evergreen groves. It may sometimes be seen in conifer-woods when travelling, but never remains there long, although in places where conifers are interspersed with non-

evergreen trees, or where there are oaks, aspens, &c., it occurs; but it is most abundant where no conifers are found, and particularly in oak-woods, or where oaks are mingled with elms, aspens, white beeches, birches, &c., and where there is abundant undergrowth. It affects meadows and pasturages on which are old oaks here and there, and is found in these localities both summer and winter through. Hence it wanders occasionally in autumn into other low growth, visiting the groves in the fields or pollard willows, and frequenting poplars or alders in the bushy parts near villages and towns, orchards and gardens. In such places it remains for several weeks at a time; but during the winter rather prefers the oak-woods. It may be seen on the trees both low down and high up amongst the branches, and even in the very tops, often dropping for a short time on to the ground under the trees. It likewise visits healthy young trees, and hunts over the smaller as well as the larger ones, mounting on the small branches to the very top. It roots in a hole of a tree, at some elevation, sometimes in an old willow, which, if undisturbed, it uses solely as a sleeping-place during the time that it remains in that locality. Late in the dusk of the evening the bird retires to rest, and, like other Woodpeckers, rises early. If there be no suitable hole, it makes one for itself, and may be seen carefully preparing its abode on the lower side of a horizontal branch, the hole being always bored on the underside. These holes are often afterwards utilized by Starlings for the purpose of nidification. . . . . It has a whirring flight, dropping with a large wavy dip, like the Great Spotted Woodpecker, when it flies far; but it is both lighter and swifter than this latter bird, and when on the wing it presents a more slender appearance. Its note closely resembles that of the Great Spotted Woodpecker; but a practised ear can distinguish it from that species, as its *kick* or *kjick* is higher in tone, and it seldom or never utters this syllabic sound by itself, or at least not when sitting still. It is always continued quickly, like *kick*, *kick*, *kick*, *kick*, or a hurried *kickickickick* &c. Sometimes it sounds like *kjäck*, *kjäck*, *kjäck*. In the spring they call continually; the male then seats itself on the very top of a high tree and repeats the syllable *kick* a countless number of times so quickly that the finish sounds almost like a chattering. He calls thus to the female, but also seems to challenge other males with a similar note; for soon after, they may be seen engaged in desperate combat, pursuing each other from tree to tree, and along the branches in close encounter; but when tired out they rest alongside of each other on the same tree and call lustily. The cry is then a harsh call, quite unlike their former one. In uttering it they raise the feathers on their crown, and after resting in a threatening attitude alongside of each other for a time, they close, and often fall in each other's grasp to the ground, screaming loudly the while. During the breeding-season the females are often pursued closely in a similar manner by the males until they accede to their desire. Like the Great Spotted Woodpecker they make a whirring sound in the spring when seated on a dry bough, which sound is oftenest heard early in the morning during fine clear weather. This Woodpecker feeds chiefly on insects, but also eats some of the seeds of trees, and swallows small stones to assist digestion. It picks out not only the insects which live in the interstices of the bark, but hammers holes and picks off whole pieces of bark to get the larvæ of the *Sirex*, *Cerambyx*, *Bostrichus*, *Forficula*, and others, and feeds also on the perfect insects, particularly small beetles, spiders, and the eggs of various insects, which it picks off the trees, or off the leafy branches. . . . When the hazel-nuts are ripe it breaks them off, fixes them in a suitable crack or fork of a tree, splinters the shell, and eats the kernel. It

only picks them off the ground when from above it spies them lying there, and does the same as regards acorns and beech-nuts, which it loves; and it is therefore seldom seen hopping about on the ground in search of them. It also cracks cherry-stones, and opens fir-cones, like its congener *P. major*."

The Middle Spotted Woodpecker commences nidification early in April, according to Naumann, sometimes late in March, and hacks its own nest-hole in a suitable tree, generally at a considerable elevation from the ground. In Styria, where Dresser found it breeding numerously, he seldom met with a nest lower than from a height of from thirty to thirty-five feet from the ground. The entrance-hole is circular, and small for the size of the bird, scarcely larger, indeed, than that of the nest of the Least Spotted Woodpecker. As in the case of the other Woodpeckers, the hole enlarges towards the bottom; and the eggs, generally five in number, are deposited on the small chips without any thing else under them. According to Naumann the term of incubation is fifteen days, both male and female sitting in turn.

Mr. Meves has published the following note—"We found a nest in an oak containing fledged young about fourteen feet above the ground. The latter were fed by the parents with caterpillars (*Geometra* and *Tortrix*), which were abundant on the oak-leaves. Mr. C. Möller showed me an old nest not above three feet above the ground. In May it had contained five eggs."

Mr. A. Benzon, of Copenhagen, writes to us as follows:—"The local Danish names for this species are the same as for the Great Spotted Woodpecker. On several of the Danish islands it is as common as that bird; and this is particularly the case in the woods near Copenhagen (Charlottenlund and Jægersborg Dyrehaven). In these parts it picks out its breeding-hole in the stems of trees, like the Great Spotted Woodpecker; but it can be distinguished from the latter bird by its smaller size. I have often found its nest at a height of three metres, generally, however, at twice this height, and sometimes even higher, and therefore cannot confirm Kjærbölling's statement that it is 'often fifty feet, seldom below twenty feet,' from the ground (one metre equals three Danish feet). Although it generally seeks its food on the trees, I have occasionally seen it hunting after insects on the ground. It sits so close that it can scarcely be driven from its eggs. In this neighbourhood it has eggs about the end of May, and lays five, seldom more. I have two sittings of five eggs, taken at Dyrehaven on the 22nd and 23rd of May respectively. It appears to breed earlier in Austria, as I have eggs from Krain, received through Seidensacher, taken on the 4th and 14th of May; and these eggs are larger than Danish specimens. Danish eggs in my collection measure in millimetres 22·5 by 16 to 23·5 by 18, whereas those from Krain measure 25·5 by 19 to 26 by 19·5."

In Dresser's collection are eggs from Southern Austria. These average in size $\frac{36}{40}$ by $\frac{28}{40}$ inch, are pure white in colour, oval in shape, and taper slightly at each end.

The figures and descriptions are from Grecian specimens, obtained by Dr. Krüper, in our own collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, *b*. Mount Olympus, October 17th, and November 4th, 1869 (*Th. Krüper*). *c*. Macedonia, August 23rd, 1870 (*Th. Krüper*). *d*. Ætolia, December 15th, 1868 (*Th. Krüper*). *e*. Near Danzig (*Pastor Boeck*). *f*. Germany (*W. Schlüter*).

E Mus. Howard Saunders.

a. Petin-a-hore, Turkey, January 8th, 1867 (*T. Robson*).

E Mus. H. B. Tristram.

a. Asia Minor, January 20th, 1866 (*T. Robson*).

E Mus. Lord Lilford.

a. Constantinople, April 19th, 1866 (*T. Robson*).

E Mus. Lord Walden.

a. Asia Minor (*T. Robson*).



LESSER SPOTTED WOODPECKER.

PICUS MINOR.

PICUS MINOR.

(LESSER SPOTTED WOODPECKER.)

Picus minor, Linn. Syst. Nat. i. p. 176 (1766).
Dendrocopus minor, Koch, Syst. d. Baier. Zool. p. 73 (1816).
Dryobates minor, Boie, Isis, 1826, p. 326.
Picus hortorum, Brehm, Vög. Deutschl. p. 192 (1831).
Picus striolatus, Macgill. Brit. B. iii. p. 86 (1840).
Picus ledouci, Malh. Mém. Acad. Roy. Metz, ii. p. 242 (1842).
Pipripicus minor, Bonap. Consp. Vol. Zyg. p. 8 (1854).
Piculus hortorum, Brehm, Naumannia, 1855, p. 274.
Piculus herbarum, id. tom. cit. p. 274.
Piculus minor, id. tom. cit. p. 274.
Piculus crassirostris, id. tom. cit. p. 274.
Piculus pusillus, id. tom. cit. p. 274.
Xylocopus minor, Cab. & Heine, Mus. Hein. Th. v. p. 51 (1863).

Little Spotted Woodpecker, *Lesser Spotted Woodpecker*, *Hickwall*, *Crank-bird*, *Pump-borer*, English; *Pic épeichette*, French; *Picchio piccolo*, Italian; *Picamadera*, Spanish (*Lilford*); *Picapoa*, Azores (*Godman*); *kleiner Buntspecht*, German; *mindste Flagspet*, Danish; *liden Flagspet*, Norwegian; *lilla Hackspetten*, Swedish; *Pienempi Tikka*, Finnish; *Tsitsach tschaitne*, Lapp (*Wheelwright*); *Dyatell malyi*, Russian; *Drieciolek*, Polish.

Figuræ notabiles.

Buff. Pl. Enl. vii. pl. 598; Werner, Atlas, *Zygodactyles*, pl. 206; Naum. Vög. Deutschl. v. pl. 136; Gould, B. of Eur. iii. pl. 231; Yarr. Brit. B. ii. p. 147; Kjærb. Orn. Dan. pl. x. fig. 1; Schl. Vog. Nederl. pl. 49; Malh. Monogr. Picid. iii. pl. xxvi. figs. 4–7; Reich. Handb. Pic. t. dcxxxvi. figs. 4234, 4235; Gould, B. Gr. Br. pt. iii.; Bettoni, Ucc. Lomb. tav. 78; Sundev. Sv. Fogl. pl.

♂ *ad.* fronte lactescenti-albâ: vertice lætè miniato, utrinque nigro linealiter marginato: pileo postico et interscapulio nigris: facie laterali lactescenti-albâ, regione paroticâ vix brunnescente tinctâ: genis fuscescenti-nigris posticè productis et dilatatis, ad latera colli plagam nigram triquetram formantibus: colli lateribus albis: scapularibus imis et dorso medio toto albis nigro transversim fasciatis: uropygio et supracaudalibus nigris: tectricibus alarum brunnescenti-nigris, majoribus albo maculatis, et fascias irregulares formantibus: remigibus nigricantibus utroque pogonio albo maculatis, secundariis dorsalibus albo transfasciatis: caudâ nigrâ, rectricibus tribus externis ferè albis nigro maculatis et transfasciatis, tertiâ basin versus obliquè nigrâ: subtùs albescens, pectore laterali angustè nigro lineato, hypochondriis subcaudalibusque brunnescenti-nigro obsoletè maculatis, corporis lateribus paullò brunnescentibus: subalaribus albis, externis nigricantibus: rostro et pedibus saturatè plumbeis: iride rubrâ.

♀ mari similis, sed vertice rubro absente, pileo antico lactescenti-albo posticè cum nuchâ nigro distinguenda.

♀ *juv.* similis feminæ, sed obscurior et pallidior, albedine flavicante: subtus sordidè albicans, abdomine fusco vario, pectoris striolis latioribus et distinctioribus: rostro pallidiore, mandibulâ flavicante.

♂ *juv.* similis præcedenti, sed pileo rubro.

Adult Male. Forehead and lores buffy white; crown of the head crimson, mixed with white, the bases of the feathers being of the latter colour; a narrow line bordering the crown on each side of the head and joined to the nape black; sides of the face buffy white, the ear-coverts distinctly brownish; a malar stripe black, paler and more dusky on the fore part, becoming more pronounced and blacker on the hinder part, whence it is produced on to the sides of the neck, where it joins a triangular patch of black; back of the head and neck, as well as the upper part of the back, glossy black; lower part of the back white, barred across with white; wing-coverts black like the back, the median and greater ones spotted and barred with white; quills blackish brown, the primaries externally marked with equidistant spots of white, forming irregular bars across the wing, secondaries more broadly barred with white, and spotted at the tips of both webs with the same colour; tail black, the three outermost feathers obliquely white towards the tip, this colour occupying about half of the third feather, two thirds of the second, and nearly the whole of the outermost, all having one subterminal band of black, the second barred on the inner web, the outermost having two bars across the feather, and one on the inner web; under surface of the body dull white, tinged with brownish on the chest and flanks; the sides of the upper part of the breast longitudinally striped with black; the flanks, vent, and under tail-coverts mottled with dusky brown; under wing-coverts white, those on the edge of the wing blackish; bill and feet dusky plumbeous; iris reddish. Total length 5·2 inches, culmen 0·65, wing 3·8, tail 2·45, tarsus 0·55.

Adult Female. Similar to the adult male, but wanting the crimson crown, which is whitish, bordered behind and on the sides with a crescent-shaped patch of black.

Young Female. Similar as regards the head to the markings of the adult female, but the white parts slightly inclining to yellow, and the black parts brown; the fore part of the head mottled with dusky, and slightly tinged with red, the crescent-shaped mark at the back of the head being ill defined; back and wings similarly marked to the old female; but the white is tinged with yellow, and the black parts are shaded with brown; the bars on the wing-coverts are not so distinctly marked, but the white tips to the quills are rather broader; the white of the back is not so pure, and the black cross bars are not so distinctly pronounced; the tail is exactly similar to that of the old bird. Underneath the young one is dusky white, a little purer on the chin, the sides of the breast streaked with lines of blackish, broader than in the adult; the abdomen mottled all over with dusky brown; bill paler than in the adult, the lower mandible inclining to yellowish.

Young Male. Like the young female, the black parts of the plumage are brown; but it has the red crown of the adult.

Obs. Considerable variation in size exists between specimens from Northern Europe and those from our own islands and the southern part of the continent. Thus Mr. Gould observes:—"I have not failed to remark that our birds are very diminutive when compared with examples killed in Norway and Russia. I am certainly within the mark when I say that the Continental specimens are a fifth larger than those killed in this country. Our birds are also less pure in colour both on the upper and under surface." In looking over a series, the specimens from Northern Europe do look to some extent larger, and have a longer wing, measuring, in Swedish birds, 3·6–3·8, and in British specimens 3·35–3·45. Spanish and

Algerian specimens, the latter of which were named *P. ledouci* by Malherbe, a name afterwards cancelled, measure 3·25–3·3. Two examples from Germany have the wing 3·5 inches in length; so that it is evident that every gradation in size from the small to the larger races can be traced.

This is the smallest European Woodpecker, and is pretty generally distributed over the Continent. It is found in England, but does not reach some of the northernmost counties, and in Scotland is almost unknown; nor has it ever been seen in Ireland. It does not occur on any of the Atlantic Islands, excepting the Azores. To the eastward, it is replaced in Siberia by a closely allied but, as we believe, distinct species, *P. kamtschatkensis*, to which the name of *Picus pipra* of Pallas is perhaps referable; and it is difficult to say where the range of the last-named bird coalesces with that of *P. minor*. Mr. Gould has very kindly lent us a pair of *P. kamtschatkensis*; and they are easily distinguished from *P. minor* by their very much whiter backs, which are not barred like the European species.

In England it is not a rare bird in many of the southern counties. Mr. A. G. More, in his paper on the distribution of birds in Great Britain during the nesting-season, says that "the present species is more southern in its distribution than *P. major*, not reaching further north than Yorkshire. Yarrell mentions its having been found in Lancashire; but I have no authority for its nesting in that county or in any part of Wales." Mr. Rodd writes:—"This small Woodpecker is sparingly distributed over the woodlands of Cornwall, especially in the eastern portions;" and in Devonshire, as we are informed by Mr. J. Brooking Rowe, it is "rarely met with in the south and south-west of the county. Mr. D'Urban says it is not uncommon in the neighbourhood of Exeter, and it has occurred several times near Barnstaple. The last I know of was killed in the neighbourhood of Totnes in 1861, and is now in my collection." Mr. Gatcombe also writes to us in a letter:—"*Picus minor* is certainly scarce in Devon. Yet its note may occasionally be heard during the spring in the neighbourhood of Plymouth, at which season I have examined specimens, and have no doubt that a few pairs breed annually in our woods. It must remain with us during the winter too; for in February last (1871) I saw two in the flesh which were killed on the 11th and 14th of that month at Newnham Park, the seat of Major Strode, a few miles from Plymouth. In March 1870 I received a letter from Seaton, on the coast of Devonshire, stating that three Lesser Spotted Woodpeckers had been lately killed in that neighbourhood; and I have at times examined other specimens from different parts of the county. In Somersetshire I should say that *Picus minor* is more plentiful than in Devon; for on April 28th, 1868, I had two males sent from Taunton by Mr. Bidgood, the curator of the Taunton Museum, with a letter intimating that the species was not very uncommon in that locality. I have also received specimens from Bridgewater and other places in that county. About a year since I got a specimen from near Newbury, Berkshire."

It is not rare in Berkshire and Somersetshire, being in the latter county much more common than the Great Spotted Woodpecker, according to Mr. Cecil Smith, as it certainly is in the former county. In Middlesex, writes Mr. Harting, it is "of more frequent occurrence than the Greater Spotted Woodpecker, or even the Green Woodpecker. I have a pair in my collection which were shot in Bishop's Wood, Hampstead; and I have seen four other specimens which were obtained there in 1861. I have observed this species in the neighbourhood of Brockley Hill and Elstree; and specimens have been obtained at Harrow. It is not an

uncommon bird about Brentford, Kew, Harrow, and Ealing, especially in spring and autumn; for although resident throughout the year, I have reason to believe that this species is partially migratory."

Mr. Stevenson gives the following account of the bird in Norfolk:—"This species, though undoubtedly scarce, probably appears even more so than it really is, its small size and wary nature rendering it easily overlooked. It remains with us throughout the year, and breeds in the country, but is extremely local. Mr. Gurney informs me that within his recollection they were killed occasionally in Cossey Park, where they were supposed to be residents; and Blickling Park would seem to be another favourite haunt, from specimens having been obtained from time to time in that locality, of which two are stated by Messrs. Gurney and Fisher in the 'Zoologist' (pp. 1702–1769) to have been killed in the spring of 1847,—the first, a male, in March, and a female in the following May. In January of the same year, as recorded in the same journal by Mr. Alfred Newton, one was obtained in a wood at Barningham; and a female was shot at Halesworth, in the adjoining county, in February 1855. Mr. George Master also informs me that he shot one at Snettisham, in Norfolk, in October 1856." Mr. Hunt, in his 'British Ornithology,' thus speaks of this bird, as observed by himself in close vicinity to Norwich, though in a locality where one would be least likely to look for it at the present time:—"We have frequently seen this species on some willow trees, at the extremity of our garden, not only during the summer months, but also in the winter season, running up the branches with great celerity." Mr. J. H. Gurney, jun., also tells us that it is rare in Norfolk, and becomes scarcer towards the north of England. In Durham he never met with it, and the only specimens that he knows of from that county are in Mr. Hancock's collection. In his book on the birds of Western Scotland, Mr. Robert Gray remarks:—"The Lesser Spotted Woodpecker is included in Don's 'Fauna of Forfarshire,' and also in Pennant's 'Caledonian Zoology.' Mr. Shearer states that it has once been observed in Caithness; and Mr. Tate, in his list of Alnwick birds, includes it as a species found on the borders. I have, however, never been able to examine a specimen killed in any part of Scotland."

Mr. Collett states that of all the Woodpeckers this species is the most evenly distributed throughout Norway, being found in most districts, from the extreme south up to the Russian frontier, while it breeds both in the low country and in the birch region on the fells. It is more numerous in the interior of the eastern districts, in the low subalpine portions; along the west coast it is rare, but has been found here and there, as, for instance, at Nordfjord. Near Christiania it is found more generally from the autumn to the spring, at the outskirts of woods, especially birch woods."

According to Nilsson "it is never seen during summer in Southern Skåne; only in winter after snow has fallen does it occasionally occur. In Northern Skåne I have seen fledged young in July. In Småland it occasionally occurs in summer, but further north is commoner. In Södermanland at all seasons it is less rare; at Gothenburg it is common throughout the year; at Oroust, in the wooded districts, some years common, others not seen; at Tjörn commonest in winter. In Dalecarlia, Herjeådal, and northern Wermland it is common." The Lesser Spotted Woodpecker was met with by Wheelwright at Quickjock, in Lapland, and was commoner there than *P. major*. M. von Wright says that it occurs probably all over Finland; but how far north

it ranges he cannot say. Dresser found it breeding as far north as Uleåborg. In Livonia it is rare, according to Meyer. Our friend Mr. A. Benzon informs us that in Denmark it occurs very rarely as a migrant. He says that, judging from the eggs in his collection, which from Norway, Finland, and Pomerania are much larger than those from Styria, this bird appears to thrive well in the north of Europe. We have before referred to the larger size of the northern birds, as compared with specimens from the west and south of Europe.

It is rare in Northern Germany, according to Borggreve, and is a partial migrant. Naumann observes:—"In Germany and Switzerland it is not exactly rare, but is nowhere numerous; and the same is said of many parts of France. In Germany there are localities where it is always found singly, others where it only passes occasionally; but in Anhalt it is certainly not one of our rarities." Dr. Rey informs us that it is very common in Moravia. According to Schlegel it breeds in North Brabant and Gelderland, and has been seen near Groningen. De Selys-Longchamps records it as rare and accidental in Belgium during migration, and it is found travelling in pairs in spring and autumn. Several have been killed at Condroz and Ardenne. He found it once at Hesbaye in May 1834. Godron says that in Lorraine it is rather rare in the woods and orchards. In Alsace it is stated by Krœner to be sedentary on the plains and mountains, inhabiting the pine-, fir-, and oak-forests, and visiting the orchards in winter; and MM. Degland and Gerbe record it as tolerably numerous throughout France. Bailly writes that "in Savoy it is met with oftener than the Greater and Middle Spotted Woodpeckers, though it is not common. In summer and the early part of the autumn it frequents the old oaks in the fir-woods, and ranges into the mountain-woods; but in the winter, and especially about a month before spring, it is most abundant in Savoy, and I suppose that they leave their more northern home on account of the cold, and, passing from grove to grove in search of food, establish their quarters in our woods on the plains and hill-sides." According to MM. Jaubert and Barthélemy-Lapommeraye "it is common in Provence, in all the wooded portions of the mountain districts, where it breeds in considerable numbers. Of all our Woodpeckers it is the least sedentary, not that it leaves us in winter, but it undertakes sundry peregrinations, and is indeed sometimes killed on the sea-coast."

Mr. Howard Saunders, in his essay on the Ornithology of Southern Spain, remarks:—"I observed this bird once at Aranjuez, where it was evidently breeding, in May. It is in most collections." Lord Lilford obtained a pair near the same place on the 26th of April 1865. It is only inserted in Professor Barboza du Bocage's list of the birds of Portugal with a query; so that no authentic evidence of its occurrence in that country has yet been received. Major Irby tells us that he has never met with the species in any part of Spain which he has visited, nor has he observed it in Morocco. It was procured by Mr. J. H. Gurney during his journey in Algeria at the wood of Oued el Alleg; and Loche writes that it is found in the forests of the three provinces of Algeria, but not numerously. Mr. F. Du Cane Godman records the Lesser Spotted Woodpecker from the Azores, and observes:—"This bird is very uncommon, but is occasionally met with in the mountains in St. Michael's, and, I believe, also in Terceira. I was unable to procure a specimen, and did not meet with it myself. Mr. Brewer tells me that after I left for England he saw one at the Furnas, and watched it for some time, and has no doubt as to the species."

Professor Doderlein considers it rarer in Sicily than *Picus major*, and has only procured a few specimens from the interior of the island. Count Salvadori says that this species is a resident throughout Italy, though nowhere numerous, and, according to Savi, is not so plentiful as the Greater Spotted Woodpecker. Dr. Giglioli found it pretty common near Pisa. It is a resident in Styria, as stated by Seidensacher; and Dresser also found it by no means rare in that country. Lord Lilford notices it as common in winter in the woods of Epirus; and according to Lindermayer it is found in the Peloponnesus and in the woods of Northern Greece. Messrs. Elwes and Buckley write as follows concerning it:—"the commonest Woodpecker in Macedonia, where it seems to prefer the alders and willows in the marshy forests to the larger and sounder timber of the hills." For the following note we are indebted to Mr. Robson:—"This species inhabits the woods of European and Asiatic Turkey, but is not so numerous as the Middle and Great Spotted Woodpeckers. They continue in the country all the year and breed, a partial migration taking place in the autumn, as they are then found in situations in which they are not met with in summer. Specimens are sometimes taken by bird-catchers with limed twigs on low trees in hedgerows during the autumn migration." Professor von Nordmann found it common in the Crimea; and in winter it occurs in the gardens of the steppes. Two individuals he procured on the river Codor, in Abasia, were considerably below the size of ordinary European specimens, but are otherwise exactly similar.

Canon Tristram did not procure it in Palestine, and observes:—"It is difficult to account for the absence of any representative of *P. minor*, or of the genus *Gecinus*, so abundantly represented from Britain to Japan. They may possibly linger in very small numbers, but have probably been exterminated from the scarcity of timber."

Pallas describes a small Woodpecker, which he calls *Picus pipra*; and ornithologists are divided in their opinions as to which of the two species of Lesser Spotted Woodpecker this name should be referred to. Although it is difficult to make out from Pallas's description, it would appear from the account he gives that he had not clearly distinguished between the European bird and its Siberian representative; for he says that his *Picus pipra* is common throughout Russia *and* Siberia.

The following notices of the Lesser Spotted Woodpecker probably refer to *P. kamtschatkensis*, though the occurrences are recorded under the heading of *P. minor*:—Messrs. Dybowski and Parvex met with it in Dauria, where it was not very common in the larch-woods, but was more numerous on the islands and banks of the Onon. Dr. Radde, who procured it in Siberia, says that it does not frequent the large forests, but prefers the small growth, especially aspen and poplar trees, and is often found on the willow-covered islands of the rivers, living in pairs in company with Titmice. On the islands of the Onon, in October, it was observed on the smooth trunk of young balsam-poplars. Dr. von Middendorff procured it at Udsköj-Ostrog in July. Dr. von Schrenck, who does not admit the difference between the Siberian bird and our European one, writes that "it is a resident and not rare in the poplar, birch, aspen, and other non-evergreen groves in Amoorland, and in the willow groves on the islands in the Amoor river. On these islands I have often seen them, as for instance, at Kidsi, Chacha, at the mouth of the Chongar, and other places. Maack and Maximowicz procured it in August and November on the Amoor Islands near Kidsi, and the former also near the mouth of the Ssungari on the 5th of July. It

is not less common on Saghalien in the non-evergreen woods than on the mainland, and is found both on the coasts and in the interior of the island, whence I have a male from the upper Tymy valley shot in January."

From Naumann's great work on the birds of Germany we extract the following excellent account of the bird's habits:—"It is more of a resident than a wanderer, and is, for instance, to be found throughout the year in our forests near water, and in other woods but rarely, or only during migration. It appears to prefer the woods on the plains to those on the hills; at least it never ranges high up into the mountains. It does not inhabit the true conifer growth, and is found there but rarely, and when passing through. On the other hand, it is fond of non-evergreen groves, especially those where old oaks are found; and it greatly affects such as skirt our rivers and streams, consisting of all sorts of non-evergreen trees (oaks, however, predominating) and thickly covered with underbrush. In the old forests where there is no undergrowth it is seldom found. In the above-named groves it is seen at all seasons of the year; and thence it visits other groves and neighbouring orchards, especially in the autumn and winter. Where oaks, aspens, ash, and other non-evergreen trees are scattered through the conifer growth it is found not uncommonly. It is fond of fruit-trees, and often frequents gardens and orchards which contain old trees during its wanderings, and in winter goes into gardens close to the peasants' houses. It works long on one tree, except on a willow, and therefore seldom remains long amongst the willows. In its winter quarters it has a regular route, which it goes over daily, generally in the same direction, and may, in fact, be seen on the same tree generally about the same time of the day. In a thinly wooded district this route comprehends a large extent of country, but in the forest it is not so. . . .

"It always roosts in the hole of a tree, which it either finds ready made and makes suitable for its purpose, or else prepares one in the rotten wood of a tree or a dry bough, generally the latter. It is often compelled to drive out Titmice and Tree-Sparrows, which make themselves comfortable in its night quarters and go to roost earlier. It seems at times to give up possession on account of these fights, and to prepare a fresh hole; and often several new-made holes are found in an oak, one of which is generally afterwards used for nidification, and the others left to other birds.

"In its habits it most resembles the Middle Spotted Woodpecker; and its flight is like that of this bird, whirring and, when over any distance, composed of a succession of bow-shaped dips, the wings being closed in the downward dip, extended as it rises again, fluttering and whirring. It does not appear to care for the severe cold, but dislikes it when the trees are covered with hoar frost. Its note resembles the *kik* or *kgiik* of the Middle Spotted Woodpecker, but is much lower and softer, and more elongated, and never uttered singly, but repeated several times like *kiik*, *kiik*, *kiik*, *kiik*, *kiik*. . . .

"Like his congeners the male bird utters the whirring sound on a dead branch in the spring; but it is much softer."

Another very good account of the habits of the Lesser Spotted Woodpecker is that given by Mr. Gould in his 'Birds of Great Britain,' from which we extract the following notes:—"The actions of the Lesser Spotted Woodpecker are restless in the extreme; for the bird is constantly fluttering from branch to branch, and from tree to tree. Like the Long-tailed Tit it appears to

have a daily round, at one time traversing the great woods, at others the line of elms growing in the hedgerow. It seldom descends to the large holes, but flits from top to top with an onward movement, in the course of which a considerable distance is traversed between morning and night. This bird especially attracted my attention in the days of my boyhood; and from that period to the present time I have watched it with great interest, in order that I might become acquainted with its breeding-places and economy, respecting which so little has been recorded that I may be excused if I should be somewhat diffuse on the subject. To render credit where credit is due, I first acknowledge my obligations to Mr. Briggs, gardener to M. de Vitré, Esq., of Formosa, near Cookham, in Berkshire, for the assistance he has rendered me in the acquisition of the knowledge I desired. During the last few years several pairs have bred in this beautiful spot, their holes being always made in the upright stems of the broken branches of the loftiest poplars at such a height as to be all but inaccessible to any one but a sailor or an Australian 'black fellow.' Aware of my anxiety to become acquainted with every detail connected with the history of this species for the purposes of the present work, Mr. Briggs, at a considerable risk both to body and limb, has mounted several of these mast-like stems, sawn them off, and lowered them to the ground without the least injury to the eggs or the young birds.

"About the end of April 1861 a pair commenced excavating in one of the lofty poplars alluded to, at which they laboured assiduously for two or three weeks, bringing the chips one by one to the opening, and throwing them out in quick succession; after the work appeared to be completed, a certain time was allowed to elapse for the deposition of the eggs, when the dead branch was sawn off a few inches below where the bottom of the excavation was supposed to be. A hole perfectly round, and an inch and a half in diameter, had been made about six inches from the extremity of the branch (which had been blown off by the wind), and was continued downwards for about a foot, gradually increasing in diameter to the bottom, where it terminated in a round cavity about the size of a breakfast cup. Unfortunately sufficient time had not been allowed for the deposit of the full complement of eggs, three only having been laid on a few chips of wood almost as fine as sawdust.

"In the same year the same pair of birds drilled a circular hole through the flinty bark of the same branch, and excavated down the stem to a similar depth. On sawing off the branch on the 10th of June, four young birds nearly ready to fly were found in the cavity. They were very active, frequently ascending to the entrance of the hole, and uttering a loud querulous cry. These young birds were sent to the Zoological Society, but did not survive many days. In the spring of 1863 the same pair made a hole and deposited four eggs in the dead branch of another of the Formosan poplars at a height of fifty-five feet. These delicate flesh-coloured eggs were very beautiful, and measured three quarters of an inch in length by half an inch in breadth."

Our friend Mr. Robert Collett also sends us a letter respecting the species in Norway:—"It is found," he writes, "both in the lowlands and on the sides of the fells, up into the birch region. It bores its nest-hole in deciduous trees, generally birch or aspen. The entrance is a circular hole, seldom above an inch in diameter; and the chips it makes are as small as sawdust; it is generally about nine inches deep. In 1859 I found several nests at Lillehammer, in the northern part of Mjösen, one of which was in a tree, at the foot of which was a large ant-hill; and though numbers of ants were continually running in and out of the hole, the female bird sat quietly on

her six eggs. This Woodpecker is often seen sitting on a dry fence-pole, from which it detaches the bark and devours the larvæ and complete insects of *Bostrichus octodentatus* and various species of *Hylastes*; and when thus employed one may approach within a few paces of it."

Our own experience in England proves that the present species nests at a considerable height above the ground, and near Cookham generally selects the rotten boughs of poplars. It often begins hewing out a hole early in the winter, if the weather be mild; and the late Mr. Briggs observed a pair hard at work on the 11th of November 1868; he showed us the newly made hole; and we picked up fresh chips from the bottom of the tree. We have also received a letter from Mr. Joseph Ford, jun., of Cookham, dated "January 24th, 1871," in which he writes:—"Mr. Godfrey has been telling me for about a fortnight of a bird which he frequently hears, but of which he cannot get a sight; and from what he told me I knew it must be a Lesser Spotted Woodpecker. We were both of us unable for a long time to find the nest; but I at last discovered it in a horse-chestnut, the next tree to the one in which Godfrey had heard the noise. It is on a dead limb; and by walking round I can see that he has worked out a very nice round hole." Judging from Naumann's note above given, it is probable that these holes are made for the purpose of roosting in, rather than for nidification.

Sometimes, however, even in England, the bird is seen nesting not far above the ground, as the following letter of Mr. George Dawson Rowley's sufficiently shows:—"On May 12th, 1862, my father's keeper took me to the nest of a Lesser Spotted Woodpecker (*P. minor*), in a pollard willow, about two feet above my head, on the banks of the Ouse river, Huntingdonshire. I saw one bird fly out of the hole, which measured one and a half inch from the entrance, and afterwards turned at right angles down the trunk. The place being conspicuous, I was obliged to cut it out, and found on a bed of fine chips two eggs. The chips probably vary with the tree; these were very soft and regular, and formed a most suitable nest, being spongy and decayed. I have both nest and eggs in my collection. The bark had numerous small holes made by the birds, apparently to find out the rotten part." Dr. E. Rey tells us that he has generally found the nest-hole at a considerable height in an oak tree, but he once found one in a pollard willow about three feet from the ground. Dresser had repeated opportunities of observing this Woodpecker during the breeding-season in Finland, and took its eggs as far north as Uleåborg. When he was living in the country near Wyburg, a pair bred in a small grove close to the house, the nest-hole being bored in the rotten bough of an old birch tree. Before they commenced nidification they were continually to be seen about the grove, and were so noisy that their presence could not be overlooked. In spite of repeated visits to their nest, which was not above ten feet from the ground, they seemed to care but little for intruders, and would allow themselves to be approached within a few yards. Both male and female appeared to take their turn at incubation, which extended over a term of about a fortnight. When the young were hatched both parents fed them assiduously, and continued to do so long after they had left the nest. Herr A. von Homeyer also gives an account of a nest he took near Glogau, in Silesia:—"This little Woodpecker nests at Hermsdorff, near Glogau, where I found a nest on the 15th of June. The young were calling out of the nest-hole; and the oldest had flown out, and took food from the parents like his brethren as he climbed about a neighbouring tree. The nest was in an almost dried-up oak; and the small entrance-hole was towards the north-west. Is this accidental? I found the

entrance to the nest of *P. medius*, a few day's later, in the same direction. Is it the rule with the *Picidæ* to take the weather-side, as this side of the tree is generally the most rotten, and therefore the easiest to work. About five feet above the nest-hole of our little Woodpecker was another hole, perhaps the tenement of last year." Mr. Harting, in his 'Birds of Middlesex,' says:—"A nest of the Lesser Spotted Woodpecker, which I found one day in May, had *two* entrances, from opposite sides of the tree; the holes were as nearly as possible in a line, and led to a larger cavity, from which the hen bird might escape on one side if assailed on the other."

Much has been written about the note of this bird, which is variously described by ornithologists. Naumann's rendering we have given above; and in Mr. Harting's 'Birds of Middlesex' the note is stated by a friend of his to be "very like that of the Wryneck, but lower and more musical." Again, Mr. Rodd writes to us:—"The note of this bird appeared to me to resemble the high chucking note of the Blackbird preparatory to its going to roost." At certain seasons it makes a loud vibratory noise, to which attention has been drawn by several writers in 'Loudon's Magazine;' and their remarks will be found reproduced in Mr. Gould's 'Birds of Great Britain.' Referring to these notices Macgillivray says, "The loud noise above described is supposed by some to be an amatory performance, as it is heard only or chiefly in spring, while others conjecture it to be produced by a rapid tapping of the bill, for the purpose of disturbing insects that are lodged in the bark. This latter opinion is more probable; for in spring it besides emits its ordinary notes so much more frequently and loudly than usual, that they may well pass for a love-song." The late Mr. Briggs, of Cookham, was of opinion that this noise was employed as a means of communication; and the following observations were published by Sharpe in a little paper on the birds of Cookham, as they were detailed to him by Mr. Briggs:—"The note of the larger species can be heard a long distance off, and its voice is powerful; but the present bird has a very weak note indeed, though somewhat resembling the cry of *P. major*. The Lesser Spotted Woodpecker is one of the earliest birds to pair; and at the period of nidification they are exceedingly busy, and constantly uttering their note. Now, as the tall poplar trees in which the birds breed are at either end of a very large field, separated from each other by about three hundred yards, the call-note of the bird would not penetrate a quarter of the distance. It often happens that the two birds are at opposite sides of the field; so, in order to call its mate, one of them runs up to the topmost and thinnest branches of the tree, tapping vigorously all the while, the *tir-r-r* becoming shriller as the bird ascends. In this manner he can call his mate; for the sound can be heard a very long way off; and he is answered in the same way by the bird from the other side of the field."

The eggs of the Woodpecker are deposited on the chips left in the bottom of the hole, which is bored by the bird itself, and are generally five or six in number. They greatly resemble the eggs of the Common Wryneck, and in a series would be extremely difficult to pick out, if indeed they could be distinguished from these latter. Eggs in Dresser's collection, taken by himself in Northern Finland, measure from $\frac{26}{40}$ by $\frac{33}{40}$ to $\frac{27}{40}$ by $\frac{34}{40}$ inch, and, like all Woodpecker's eggs, are pure white in colour. Dr. E. Rey tells us that the average size of eleven undoubted eggs, taken near Halle, is 18·75 by 14·4, the largest measuring 19·75 by 15·0, and the smallest 17·25 by 13·75 millimetres respectively. The late Mr. H. Wheelwright observes:—"I consider the egg of the Lesser Spotted Woodpecker a most difficult one to obtain well authenticated. They

appear to go to nest late; and I have always obtained the eggs out of a hole in a small dead fir or aspen. The number is usually five, sometimes six. The collector should be very careful in the identification of the eggs of all the Woodpeckers. The egg of the Wryneck is doubtless often substituted for that of the Lesser Spotted Woodpecker; but on placing two genuine *fresh* eggs side by side, the difference may be easily detected; for the egg of the Wryneck has a more elongated form, and the white colour, although perhaps purer, has not so much of that beautiful shiny gloss which characterizes the eggs of all the Woodpeckers." On the other hand, writes Mr. Gould:—"Some persons have stated that the eggs of this bird resemble the Wryneck's; but a comparison of the blown specimens will at once show that they are very different—those of the Wryneck being of a dull opaque chalky white, while those of the Woodpecker are so transparent that when placed on pink wool the colour is plainly visible through them; the surface, too, is glossy, and approximates in appearance to those of the Kingfisher, Roller, and Bee-eater."

The figure of the male in the Plate is from a specimen procured by Dresser in Finland, the female being from Sweden; the hinder figure represents a female from Algeria, the *P. ledouci* of Malherbe, which we have figured in order to show that there is no difference in the species: this bird has been lent us by Mr. J. H. Gurney, jun. We have described Swedish specimens—the male in Lord Walden's collection, and the female in our own.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, ♂. Hertuala, Wyburg, Finland, June 30th, 1856 (*H. E. Dresser*). *b*. Sagersta, Sweden, July 17th, 1871. *c*, *d*, ♀. Stockholm, October 2nd, 1870, and January 12th, 1871. *e*, *f*, *g*, *h*. Wermland, October 1870, and December 1871. *i*, *j*, ♂, ♀. Ætolia, January 24th and 28th, 1869 (*Dr. Krüper*). *k*, ♀. Turkey, October 16th, 1869 (*T. Robson*).

E Mus. W. Schlüter.

a, *b*. Mähren.

E Mus. Lord Walden.

a, ♀. Cookham, Berks, May 1865 (*W. Briggs*). *b*. Sweden (*H. Wheelwright*).

E Mus. J. H. Gurney, jun.

a, *b*, ♂, ♀. Taunton, Somerset, April 27th, 1868 (*J. Gatcombe*). *c*. Blida, Algeria, February 14th, 1870 (*J. H. G.*).

E Mus. H. B. Tristram.

a, *b*, ♂, ♀. Stafford, 1849.

E Mus. Lord Lilford.

a, *b*, ♂, ♀. Aranjuez, April 26th, 1865 (*L.*).

E Mus. J. Gould.

a, ♂ *pull.* Formosa, Cookham, Berks, June 9th, 1862 (*W. Briggs*). *b*, *c*, ♂, ♀. Bashkiria, October 14th and November 6th, 1851 (*P. kamtschatkensis*).

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Ė Mus. Cecil Smith.

a. Taunton, Somersetshire (*C. S.*). *b.* River Dart, South Devon.

P.S.—There is still something to be found out about the young of this species; and we should be glad to receive further notes on the subject. Mr. Gould figures the young birds in his 'Birds of Great Britain,' the male with a crimson forehead and the female without. Mr. Meves, however, sends us a female with a decided blush of crimson on the fore part of the head. Another female sent us by the same gentleman, and killed in Wermland in December 1871, has lost nearly all trace of the crescentic frontal patch, which is blackish, with white bases to the feathers. Mr. Cecil Smith has also very kindly lent us a specimen from his collection, which is apparently a very old female, and has the slightest traces of crimson on the hinder margin of the frontal patch. We think it best to note these changes, although at present we can offer no explanation of them.



J.G.Keulemans. del.

Hanhart imp

SIBERIAN LESSER SPOTTED WOOD PECKER.

PICUS PIPRA

PICUS PIPRA.

(SIBERIAN LESSER SPOTTED WOODPECKER.)

Picus pipra, Pall. Zoogr. Rosso-As. i. p. 414 (1811).
Trichopicus kamtchatkensis, Bp. Consp. Vol. Zygodact. in Ateneo Italiano, no. 8. p. 8, May 1854.
Picus kamtschatcensis, Sund. Consp. Pic. p. 26 (1866).
Xylopicus kamtschatcensis, (Bp.), Cab. Mus. Hein. iv. p. 53, footnote (1863).
Xylopicus pipra (Pall.), Cab. ut suprà (1863).

Figura unica.

Malh. Monogr. Pic. tab. 26. figs. 1, 3.

Ad. Pico minori similis sed major: corpore subtùs albo nec striato: dorso albo vix nigro notato nec distinctè fasciato sicut in *Pico minore*.

Adult Male (Krasnojarsk). Resembles *Picus minor*, but is larger in size, and the white portions of the plumage are more extensive; the back is not regularly barred, but has merely a few irregular indications of bars; underparts pure white, with the faintest possible indications of striations on the sides of the breast; outer tail-feathers much more faintly barred than in *Picus minor*. Total length about 6·5 inches, culmen 0·72, wing 3·8, tail 2·7, tarsus 0·68; soft parts as in *Picus minor*.

Adult Female (Archangel). Differs from the female of *Picus minor* in the same way as the male does.

When writing the article on *Picus minor* together with my late colleague Mr. R. B. Sharpe, now over seven years ago, we referred to *Picus pipra* as a purely Siberian species, and were only in possession of two specimens to compare with our European Lesser Spotted Woodpecker; but since then I have not only had more examples for examination, but have been able to convince myself that its range extends westwards into Europe; so that it certainly must be included in the present work. It appears that this northern and eastern representative of *Picus minor* inhabits Siberia, the islands of Saghalien and Yesso, possibly also Japan proper, and North-eastern Russia.

I possess a specimen sent to me from Archangel, where Mr. Seebohm also shot it; and this gentleman likewise obtained it on the Petchora river in Northern Russia. He also informs me that he has lately received a specimen from Krasnoyarsk, and that Dr. Theél saw it near where the Nishni Tungorsk joins the Yennesei, in lat. 66° N. Messrs. Middendorff, Schrenck, Radde, and Dybowski all met with this species in the portions of Siberia they visited; and the notes they have published respecting its presence there are given in our article on *Picus minor*. Colonel Prjevalsky is also stated to have obtained it in the Ussuri country. Von Schrenck records it as being tolerably common on the island of Saghalien, whence Mr. Seebohm has received it, as also from Yesso.

Compared with examples from Central Europe the differences between this species and *Picus minor* are very apparent; for its large size and peculiarly white markings distinguish it at once; but in Sweden the Lesser Spotted Woodpecker becomes rather paler and runs larger in size, thus showing an affinity to the present species; and one female in my collection runs very close to the female from Saghalien, but has the underparts much darker and the back more distinctly barred. On the other hand, a male *Picus pipra* from Japan, in the collection of Mr. H. Seebohm, has the back nearly as much marked with black as in some Swedish-killed specimens. The female of *Picus pipra* from Archangel, however, is a very characteristic example, and is quite as pale in coloration as the female from Saghalien.

The specimens figured are a male and female from Siberia; and the two above described are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀. Archangel, September 1875 (*C. Craemers*). *b*, ♂. Island of Tataschew, Krasnoyarsk, October 22nd, 1878 (*Kibort*).

E Mus. H. Seebohm.

a, ♂. Saghalien, January 15th, 1856. *b*, ♀. Saghalien, September 12th, 1856 (*Von Schrenck*). *c*. Krasnoyarsk, November 3rd, 1878 (*Kibort*).

Genus PICOIDES.

Picus apud Linnæus, Syst. Nat. i. p. 177 (1766).
Picoides, Lacépède, Mém. de l'Inst. an 9, iii. p. 509 (1801).
Tridactylia apud Stephens in Shaw's Gen. Zool. ix. p. 218 (1815).
Dendrocopus apud Koch, Baier. Zool. i. p. 74 (1816).
Dryobates apud Boie, Isis, 1828, p. 326.
Picoides, C. L. Brehm, ex Lacépède, Isis, 1828, p. 1274.
Apternus apud Swainson, Faun. Bor.-Am. Aves, p. 301 (1831).
Pipodes apud Gloger, Handb. d. Naturg. p. 198 (1844).

This group (which includes the European and American species which have only three instead of four toes) is one of the most distinct of the genera of our European Woodpeckers. It is represented in the Palæarctic and Nearctic Regions only, inhabiting the northern portions of those regions, but one species being found in the Western Palæarctic Region.

In general habits, food, and mode of nidification the Three-toed Woodpeckers do not differ from the species included in the genus *Picus*; and, like them, they deposit pure-white glossy eggs.

Picoides tridactylus, the type of the genus, has the bill as in *Picus*, but rather more slender and longer, the wings long, broad, the first quill very short, the second shorter than the sixth, the fourth longest; tail rather long, wedge-shaped, the feathers stiff, the central ones deflected at the tip; feet short, stout; toes rather long, strong, only three in number—one, long, directed backwards, and two, moderately long, directed forwards; claws very strong, curved, acute.

There is some difficulty in deciding which name should properly be used for the present genus. *Picoides* was first given by Lacépède in a paper read in 1798, but not published until 1801; but he does not give a type, or even name any species as belonging to the genus, and we have only the authority of subsequent authors that he meant this genus to include the Three-toed Woodpeckers. The next title in order of date is *Tridactylia*, Stephens (1815), his type being *Picoides hirsutus*; but it is obviously inexpedient to use this name, as it has never been recognized, and it would necessitate a fresh specific name for *Picoides tridactylus*, a course to be strongly deprecated. Next comes *Picoides*, C. L. Brehm, ex Lacépède (his type being *Picoides tridactylus*), which appears to me to be the best generic name to adopt, it having the precedence of *Apternus*, Swainson, by three years.



THREE-TOED WOODPECKER.
PICOIDES TRIDACTYLUS
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PICOIDES TRIDACTYLUS.

(THREE-TOED WOODPECKER.)

Picus tridactylus, Linn. Syst. Nat. i. p. 177 (1766).
Picoides tridactylus, Lacép. Mém. de l'Inst. 1799.
Picus hirsutus, Vieill. Ois. Am. Sept. ii. p. 68, pl. 124 (1807).
Tridactylia hirsuta, Steph. Gen. Zool. ix. p. 219, pl. 38 (1815).
Dendrocopus tridactylus, Koch, Syst. d. Baier. Zool. p. 74 (1816).
Picoides variegatus, Valenc. Dict. Sci. Nat. xl. p. 191 (1826).
Dryobates tridactylus, Boie, Isis, 1828, p. 326.
Picoides europæus, Less. Traité d'Orn. p. 217 (1831).
Picoides alpinus, Brehm, Vög. Deutschl. p. 194 (1831).
Picoides montanus, id. op. cit. p. 194 (1831).
Apternus tridactylus, Gould, B. of Eur. iii. pl. 232 (1837).
Pipodes tridactylus, Gloger, Handb. d. Naturg. p. 198 (1844).
Picus crissoleucus, Brandt, MS. in Mus. Petrop., *undè*
Apternus crissoleucus, Bonap. Consp. Vol. Zyg. p. 9 (1854).
Apternus kamtchatkensis, Bonap. Consp. Vol. Zyg. p. 9 (1854).
Apternus longirostris, Brehm, Naumannia, 1855, p. 274.
Apternus montanus, id. tom. cit. p. 274.
Apternus septentrionalis, id. tom. cit. p. 274.
Picoides crissoleucos, Baird, B. of N. Am. p. 101 (1860).
Tridactylia camtschatcensis, Cab. & Heine, Mus. Hein. Th. iv. p. 25 (1863).
Picus leucopygus, Sundev. Consp. Av. Pic. p. 14 (1866).

Dreizehiger Specht, German; *Tretaaet Spette*, Norwegian; *Tretåig Hackspett*, Swedish; *Kolmivarvas Tikka*, Finnish; *Tschaitne*, Lapp; *Dyatell trechperstnyi*, Russian; *Dzieciot trzypalcowy*, Polish.

Figuræ notabiles.

Edwards, Nat. H. Birds, iii. pl. 114; Donovan, Brit. B. vi. pl. 143; Werner, Atlas, *Zygodactyles*, pl. 207; Naum. Vög. Deutschl. v. pl. 137; Gould, B. of Eur. pl. 232; Kjærb. Orn. Dan. pl. ix. fig. 4; Reich. Handb. Pic. t. dcxxxi. figs. 4195, 4196; Malh. Monogr. Pic. iii. pl. xxxviii.; Sundev. Sv. Fogl. pl. xxiii. fig. 6.

♂ *ad.* vertice flavo, plumis obsoletè albido transfasciatis: fronte, loris et setis rictalibus, vertice laterali et posticâ totis albis paullò nigro variegatis: pileo laterali et nuchâ cristatâ indigotico-nigris, regione paroticâ et fasciâ malari concoloribus: genis albis, posticè productis, et vittâ angustâ ab oculo postico ortâ, ad collum posticum conjunctâ, albis: dorso medio albo, interscapulio et dorso imo paullulùm nigro variegatis: scapularibus et tectricibus alarum nigris concoloribus, harum majoribus paucis vix albo

apicatis: remigibus nigris, extùs albo maculatis et terminatis, secundariorum pogoniis internis latiùs albo maculatis, ut et pogoniis internis celatis primariorum: uropygio et supracaudalibus nigris: rectricibus sex mediis nigris, reliquis pogonio externo et ad apicem pogonii interni albo maculatis et terminatis, rectrice extimâ minimâ extùs albâ haud fasciatâ: subtùs albus, pectoris superioris lateribus maculis triquetris vel longitudinalibus nigris notatis, hypochondriis crisso et subcaudalibus nigro transfasciatis: subalaribus albis nigro transfasciatis et maculatis: cruribus nigris albo variegatis: rostro plumbescenti-corneo: pedibus plumbeis: iride lætè rufescenti-brunneâ.

♀ mari simillima, sed picturâ capitis diversâ distinguenda: vertice flavo absente, pileo nigro anticè albo vario.

Juv. similis adultis, mas pileo flavo mixto agnoscendus, femina flavedine nullâ: sed dorso plus minusve nigro variegato, et hypochondriis corporisque lateribus cum crisso et subcaudalibus conspicuè nigro transversim fasciatis.

Adult Male. Forehead and eyebrow, as well as the bristles covering the nostrils, blue-black, thickly spotted with white; crown of the head yellow, obsoletely barred across with whitish; sides of the face and nape blue-black, this colour forming a moustachial stripe and a line enveloping the eye and ear-coverts, and extended on to the shoulder; a white stripe drawn from the lores down the cheeks, and another from the eye extending above the ear-coverts on to the sides of the neck and joining just behind the nape; middle of the back pure white; scapulars blue-black; rump black, with a few spots of white at the tip of some of the upper tail-coverts; wing-coverts and outer face of the wing glossy black, the primaries externally spotted and tipped with small spots of white, the secondaries unspotted, excepting the innermost, which have rather large spots of white on the inner web; tail black, the three outermost feathers barred and tipped with white, these bars being absent, however, on the little outside feather, which is quite white on the outer web; under surface of the body pure white, the sides of the upper part of the breast marked with longitudinal or triangular black streaks; sides of the body, flanks, and under tail-coverts barred across with black; thighs black, slightly varied with white; under wing-coverts white, barred with black; inner face of the wing black, spotted on the outer webs and barred on the inner webs with white; bill dark leaden-brown; legs lead-colour; iris rich dark reddish brown. Total length 8·4 inches, culmen 1·2, wing 4·85, tail 3·5, tarsus 0·85.

Adult Female. Similar in general markings to the male, but wanting the yellow crown. The head is entirely blue-black, the forehead being covered with longitudinal white tips to the feathers, giving it a hoary appearance.

Young Birds. The young male resembles the adult of the same sex, but has the plumage browner, and the yellow patch on the head is not nearly so large; the middle of the back and the sides of the body white, plentifully mottled and barred with black. The young female is similarly coloured and mottled to the young male, and differs from the old female in not having the white on the forehead so distinct.

Obs. After careful consideration we have come to the conclusion that *Picus crissoleucus* of Brandt is not in any way separable from *P. tridactylus*, and is probably nothing more than the very old bird of the latter species. It differs chiefly in having the lower flanks and vent white, with only a very few indications of black spots; but we have shown in our descriptions that the black markings are more or less a sign of youth, and are less frequent in the older specimens. *P. crissoleucus* is stated by Professor Sundevall to be in the Stockholm Museum, from Archangel; but Mr. Meves tells us that it likewise occurs in Sweden: "a female, purchased in the flesh at Munkbron in February, agreed with *Picus crissoleucos* of Brandt, and was even whiter than an Archangel specimen in the Stockholm Museum." When at

Leiden, Dresser made a careful comparison of specimens in the magnificent collection under the care of Professor Schlegel, and found that birds from Central Europe did not appreciably differ from those obtained in Siberia. One very light-coloured bird from Siberia had the underparts white, very slightly marked with black, the under tail-coverts white, the outer web of the outer tail-feathers nearly pure white; but, on the other hand, another specimen, obtained in Germany, was almost equally white, and had the outer web of the outer tail-feather on the one side entirely of this colour, with one black spot about as big as a pin's head, and the outer web of the tail-feather on the other side also white, with two small spots. The species described by Professor Baird as *P. dorsalis*, only known from a single specimen obtained in the Rocky Mountains, may yet turn out to be the present bird. Dresser has compared the plate in the 'Birds of North America' with numerous Siberian specimens in the possession of M. Jules Verreaux; and the latter eminent ornithologist, as also Mr. D. G. Elliot, agreed that the American species could not be specifically separated. In the absence of specimens it is difficult to determine this question satisfactorily; and it must be noticed that Professor Sundevall classes it with the other American species, all of which are distinguished by having only two, or at most four, central tail-feathers entirely black. A reexamination of the type specimen is desirable.

THE present species, which is easily distinguished from the other European Woodpeckers by its having only three toes, is chiefly met with in the northern parts of the Continent, whence it ranges across Siberia. In the central and southern portions of Europe it only occurs in mountainous localities, and becomes less frequent towards the shores of the Mediterranean.

Its occurrence in Great Britain is very doubtful, as will be seen by the following extract from Mr. Robert Gray's 'Birds of the West of Scotland:'—"In Donovan's 'British Birds' a figure is given of the Three-toed Woodpecker on plate 143, vol. vi., and in the accompanying letterpress it is stated that a specimen of the bird had been 'lately shot in the north of Scotland;' upon the authority of which the species was inserted among the migratory visitants to the British islands. No other specimen appears to have occurred since Donovan's time." We need scarcely notice the reputed breeding of the species in the Isle of Arran, as Dr. Martin Barry is stated to have found it: the responsibility of this statement rests upon the author of the above-named gentleman's sale-catalogue, than whom it would be difficult to find a more untrustworthy authority.

Mr. Robert Collett, writing on its geographical distribution in Norway, states that it breeds tolerably abundantly in the thickly wooded and subalpine portions of Eastern Norway, from Smaalehnene up to the Russian frontier, especially in Osterdalen, Gudbrandsdalen, and Valders, and northward into the Polar Circle. Westward of the fells it is rarer; it breeds at Næs iron-works, in Nedenæs, but along the west coast has only been procured at Bergen. On the fell-sides it is common up into the birch region. Near Christiania it is rare, but occurs in the autumn, and is sometimes seen in the market amongst Thrushes that have been snared. It remains there during the winter, but has not been found breeding in that locality; still it cannot breed far off, as Professor Rasch shot some young birds, scarcely fledged, in July, between Grefsenaasen and Nittedalen. Messrs. F. and P. Godman procured an immature specimen near Kop Vaud. Sommerfeldt includes it in his list of birds found at the Varanger Fjord as an occasional visitor. According to Professor Sundevall it is found in Scandinavia as high north as the forest growth exists, or up into Finmark in 70° N. lat., but does not range far south, and is seldom found regularly below Norrland. Nilsson records it as tolerably abundant in some parts

of Scandinavia. In Dalecarlia, Herjeådalen, and Upper Wermland it is constantly to be found—and occurs far down in Småland and Östergöthland, being often observed in the woods near Linköping. It occasionally occurs near Gothenburg, has been seen at Oroust; and the Rev. Mr. Ekström shot one at Tjörn. It has not yet been recorded as occurring in Skåne. In Finland, according to Von Wright, it is neither scarce nor yet common, but is tolerably numerous near Kuopio, and not rare in Nyland. Dresser only observed it on two occasions in Central Finland, and never met with it in the northern part of the country. Respecting its occurrence in Denmark, Mr. A. Benzon writes us as follows:—"Kjærbölling included it as a Danish bird by mistake, and I may state positively that it has not been seen here. Borggreve states that it is resident in Silesia, and has once been shot at Anhalt. Naumann observes that it inhabits the higher mountain-forests in Switzerland, the Tyrol, Austria, and Salzburg, but is only very rarely seen in the woods in the lower parts of Germany. Naumann erroneously states that it inhabits North America, which is not the case, as its place is there taken by two allied species, *Picoides arcticus* and *Picoides hirsutus*." Dr. E. Rey writes to us that this species breeds in Mähren, and occurs in Switzerland, Bohemia, and Galicia, but does not appear to breed there.

Degland and Gerbe state that it is not rare in the canton of Berne and in Zurich, but is not found near Geneva; in France it is accidental; nor is it mentioned by Godron as occurring in Lorraine. Respecting its occurrence in Savoy, Bailly remarks that a few individuals wander, generally in the winter season, from Switzerland, and penetrate to the woods of Faucigny, especially in those of Sixt and Chamounix, and thence, according to the severity of the season, to the woods of Geneva. Mr. Bailly further notes the occurrence of a young male near Annecy in 1848, another at Chamounix in the winter of 1849, and a third near Chambéry. He does not think that it breeds in Savoy. Professor Salvadori remarks that this species is only mentioned in two catalogues of Italian birds, viz. in that of Risso, treating of the avifauna of the Maritime Alps, and that of Althammer, treating of that of the Tyrol. It is apparently confined to these alpine frontiers, as its occurrence even in the Apennines has not yet been recorded.

Count Casimir Wodzicki states that in the Carpathians it is probably commoner than in any other mountain-range in Europe, but still it is but little known, as it is so shy, and more especially so during the breeding-season. Our friend Dr. Taczanowski writes to us as follows:—"It is," he says, "common in the Carpathians, in Austrian Galicia, but not found on the plains of Galicia, or the Kingdom of Poland. Its habitat recommences in the plains of the Province of Augustow, where I found near the town of that name a nest with young just hatching (the male and the egg-shells from this nest are in the Warsaw Museum). It is rare; for I never again observed it between this locality and the town of Kowno; but the sportsmen of that country assure me that they know it. Further on in Lithuania it becomes more and more common." Pallas says it is found "everywhere in Russia, in the woods and poplar-groves, even in the neighbourhood of Moscow, but more commonly near the Volga and the Ural Chain, and in the northern parts; thence it extends through Siberia in groves, especially about the river Tschulys." Dr. von Schrenck found it in Southern Siberia, and states that on the Lower Amoor and the northern part of Saghalien it is the commonest Woodpecker. Near the Nikolajefsk post he observed it often in August in the high larch- and pine-wood, and later in the autumn and during the winter in the birch, aspen, and mixed or non-evergreen woods on the shores of the Lower Amoor.

Middendorff observed it on the Jenesei, 62° N. lat., and several times on the Stanowoj Mountains, also southward to Udskoj-Ostrog. Radde found it on the Amoor, where it frequented the pine-woods in winter, often changing its locality. In the non-evergreen woods on the Central Amoor it was rare.

Although possessing one toe less than the other species of Woodpeckers, this bird is an equally agile climber, and is indeed, if any thing, more adroit in its movements than many of its congeners. Wherever the fire has devastated a portion of the forest, there it may be looked for, as the insects which frequent the scathed trees, and soon render them useless for all purposes of commerce, form its chief food. Especially during the bright clear winter mornings its busy tapping may be heard; and the number of noxious insects devoured by one bird is almost incredible.

In its movements it is quick and active, and will rapidly move in a spiral direction up a tree, carefully examining every likely place in search of its food, and then suddenly flying to another tree will continue its search with the greatest assiduity. Like other Woodpeckers it often, if not invariably, undertakes journeys during the autumn and winter season, impelled probably by the scarcity of suitable food in its summer home; but as soon as the spring advances, it returns again to its old haunts for the purpose of nidification. When there is a scarcity of insect food it will at times feed on berries, but only when driven to do so from a failure of its usual support. The nest is, like that of the Greater Spotted Woodpecker, a hole, which the bird itself hacks out; and on the small particles of wood on the bottom of this nest-hole it deposits its eggs, generally from four to six in number. A series of eggs in Dresser's collection, obtained in Torneå, Lapland, measure from $\frac{59}{80}$ by $\frac{73}{80}$ to $\frac{61}{80}$ by $\frac{76}{80}$ inch, and are pure glossy white in colour. In general shape and size they closely resemble eggs of the Middle Spotted Woodpecker.

Dr. Rey tells us that he has measured twenty eggs of this bird from Muonio, Lapland, the average of which is 24·2 by 18·6 millims., the largest measuring 26·0 by 19·0, and the smallest 22·5 by 18·75 millims. The breeding-time is from the 5th to the 15th of June, and the number of eggs from four to five.

Concerning the species in Norway, our friend Mr. R. Collett further writes to us:—"It ranges up the fell-sides like *P. minor*, and breeds in the highest fir growth or even in the birch region. It affects the large woods in the subalpine regions, where it is tolerably numerous; and in the autumn it wanders into the lowlands, and is then found in non-evergreen woods, where it is at times caught in snares set for Thrushes, and therefore probably feeds on berries. In October 1871 I examined the stomachs of three individuals, and found them to contain larvæ and the perfect insect of a species of *Hylastes*, and of a species of *Cecidomyia*, a few larvæ of *Rhagium indagator*, one of the greatest pests to our forests, and a few other insects, chiefly coleoptera."

The old male is described from a Norwegian specimen shot by Mr. George Gillett, and kindly lent to us by him, the female being a Stockholm bird given to us by M. Meves. The pair figured in the Plate are also in our own collection, from Switzerland, presented to us by our friend Mr. H. J. Elwes.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, ♀. Stockholm, November 10th, 1867. *b*, ♂. Russia, 1868 (*C. Dode*). *c*, *d*, ♂, ♀. Switzerland (*H. J. Elwes*).

E Mus. Howard Saunders.

a, *b*, ♂, ♀. Ursern, Switzerland (*Nager Donazian*).

E Mus. Salvin and Godman.

a, ♂. Kop Vaud, Norway (*F. Godman*). *b*, ♂. Sweden (*Wheelwright*).

E Mus. Lord Lilford.

a, *b*, ♂, ♀. Europe (*Verreaux*).

E Mus. T. E. Buckley.

a, ♂. Lapland, August 16th, 1866 (*T. E. B.*).

E Mus. G. Gillett.

a, ♂. Norway, September 22nd, 1868. *b*, ♀. Norway.

E Mus. H. B. Tristram.

a, ♀. Sweden (*H. Wheelwright*). *b*. Kjæningœ, Nordland, July 1852. *c*, ♂. Tinspong, Sweden, January 15th, 1849.

E Mus. E. Hargitt.

a, *b*, ♂, ♀. Europe (*Verreaux*). *c*, ♂. Sweden (*H. Wheelwright*). *c*, *d*, ♂, ♀. Gårdsjö, Sweden, March 12th and April 4th, 1863 (*H. Wheelwright*).

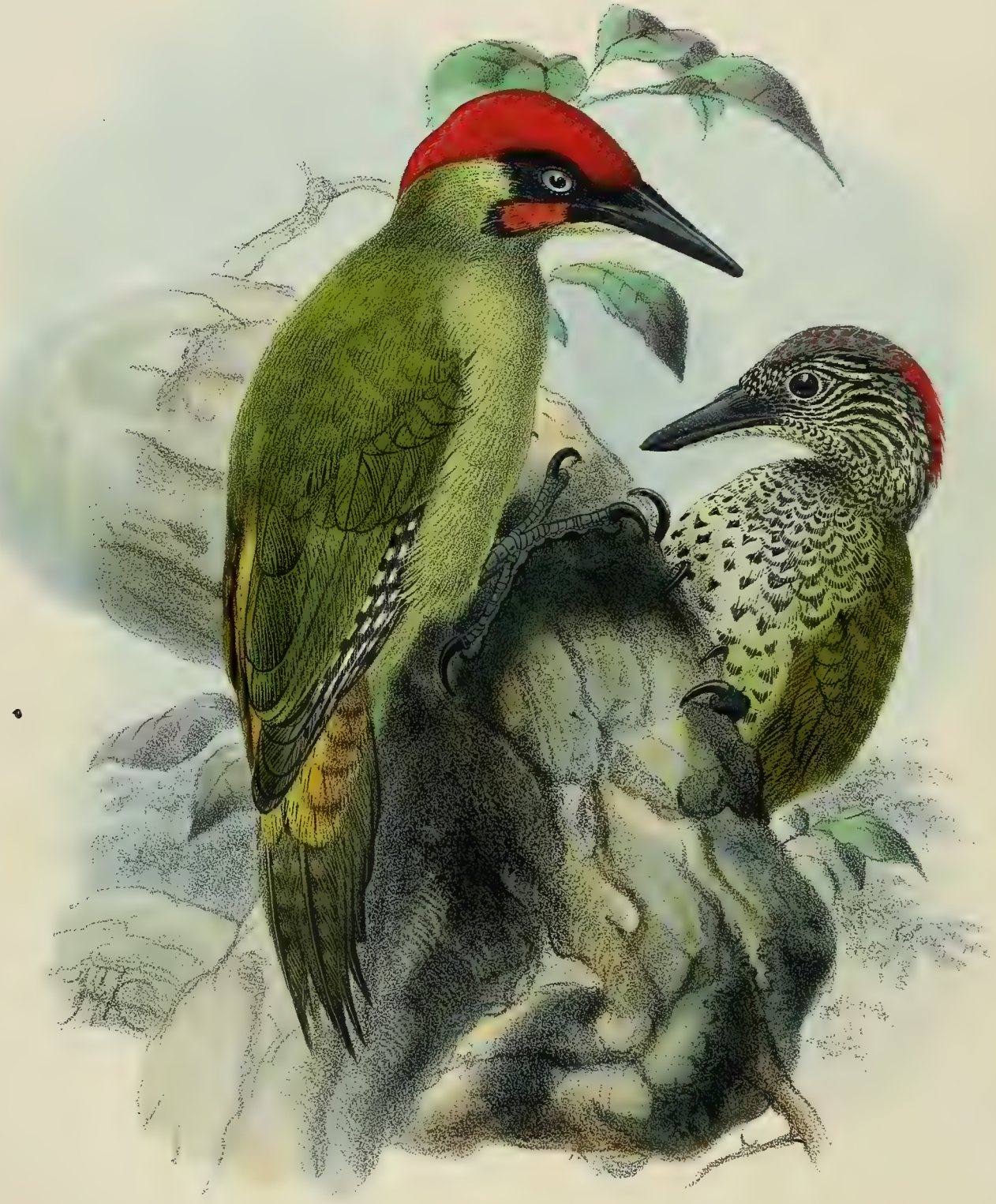
Genus GECINUS.

Picus apud Linnæus, Syst. Nat. i. p. 175 (1766).
Colaptes apud C. L. Brehm, Isis, 1828, p. 1274.
Gecinus, Boie, Isis, 1831, p. 542.
Brachylophus apud Swainson, Classif. of B. ii. p. 308 (1837).
Chloropicus apud Malherbe, Mém. Soc. Hist. Nat. Metz, p. 5 (1846).

The Green Woodpeckers have very generally been separated from the genus *Picus*, and form a very fairly separable group, having some affinity with the American genus *Colaptes*; for Macgillivray points out that they have two glossolaryngeal muscles twisted round the trachea, which he did not find to be the case in any of the fifteen or twenty other species he dissected, with the exception of *Colaptes auratus*. The species belonging to the genus *Gecinus* inhabit the Palæarctic, Ethiopian, and Oriental Regions, four species being found as residents in the Western Palæarctic Region.

In general habits they do not differ appreciably from the other Woodpeckers; but they feed more on ants and their larvæ than any of their allies, and will frequently visit the ant-hills to obtain these, sometimes moving about on the ground for some distance, progressing by means of short jumps. Like their allies they excavate their own nest, and deposit pure white eggs.

Gecinus viridis, the type of the genus, has the bill as in *Picus*, but rather broader at the base and a trifle more pointed; nostrils oval, covered by reversed bristly feathers; wings long, broad, the first quill very short, the second shorter than the seventh; tail rather short, wedge-shaped, the feathers stiff, the central ones rather deflected; feet stout; the tarsus rather long; first toe very short, directed backwards, the second moderate, united to the third at the base, fourth long and directed backwards; claws stout, strong, acute, curved, laterally grooved; plumage blended, the general coloration green.



GECINUS VIRIDIS.
XXVI

GECINUS VIRIDIS.

(GREEN WOODPECKER.)

Picus viridis, Linn. Syst. Nat. i. p. 175 (1766).
Gecinus viridis, Boie, Isis, 1831, p. 542.
Gecinus pinetorum, Brehm, Vög. Deutschl. p. 197 (1831).
Gecinus frondium, Brehm, Vög. Deutschl. p. 197 (1831).
Gecinus virescens, Brehm, Vög. Deutschl. p. 199 (1831).
Brachylophus viridis, Swains. Classif. of B. ii. p. 308 (1837).
Chloropicus viridis, Math. Monogr. Picid. i. p. 118, pl. lxxix. figs. 1–4 (1862).

Green Woodpecker, English; *Pic vert*, French; *Picchio verde*, Italian; *Picazza ferru viridi*, Sicilian; *Grünspecht*, German; *De Groene Specht*, Dutch; *Grœnspet*, *Skovkok*, Danish; *Grön Hackspett*, Swedish; *Grœnspet*, Norwegian; *Viheriätikka*, *Kärki*, Finnish; *Dyatell zelenöi*, Russian.

Figuræ notabiles.

Naumann, Vög. Deutschl. v. pl. 132; Gould, B. of Eur. iii. pl. 226; Yarrell, Brit. B. ii. p. 132; Malherbe, Monogr. Picid. iv. pl. lxxix. figs. 1–4; Bettoni, Ucc. nidif. Lomb. tav. 65; Gould, B. of Gt. Brit. part iii.

♂ suprà viridis: pileo usque ad nucham posticam et vittâ malari lætè scarlatinis: loris, superciliis et regione orbitali nigris: regione auriculari, colli lateribus et corpore subtùs toto grisescenti-albido, hôc magis flavicante: tectricibus alarum aurato-viridibus: remigibus saturatè brunneis, extùs aurato-viridi lavatis, secundariis præsertim, remigibus omnibus pogonio interno albo transfasciatis, primariis extùs maculis parvis albidis notatis fascias transversales vix formantibus: dorso postico et uropygio lætissimè aureis, tectricibus supracaudalibus paullò viridi lavatis: caudâ brunneâ, fulvescenti-brunneo irregulariter transfasciatâ et sub certâ luce aurato-viridi nitente: subcaudalibus albidis, viridi irregulariter transnotatis: subalaribus albidis brunneo transfasciatis: rostro plumbeo, ad apicem nigro, versus basin pallidiore: pedibus saturatè plumbeis: iride albâ, vix cærulescente.

♀ mari omninò similis, at vittâ malari scarlatinâ absente.

♂ *juv.* ab adultis maximè differens: suprà viridis, flavido translavatus, et maculis parvis albidis adspersus: pileo griseo, scarlatino punctulato: superciliis nigris albido striolatis: vittâ malari nigrâ albido maculatâ: subtùs albescens, abdomine flavicante, ubique nigricanti-brunneo squamato: iride cinerascente.

♀ *juv.* similis præcedenti, sed pallidior et pileo magis aurantiaco mixto.

Adult Male. Above green; lower part of the back, rump, and upper tail-coverts brilliant yellow, the latter tinged with greenish; crown of the head, extending backwards to the hinder part of the nape, brilliant scarlet; lores, eyebrows, and the region round the eye black; a broad malar stripe scarlet; hinder part of the ear-coverts, sides of the neck, and under surface of the body greyish white, inclining to

yellow on the latter; wing-coverts green, with a distinct golden lustre; the primary coverts brown, slightly washed with green, and barred with paler brown; quills brown, the inner web barred with whitish, the primaries tinged with green near the base of the outer web, which is marked with several white blotches, more or less irregular, secondaries so broadly washed with golden green as to be almost entirely of that colour; under wing- and tail-coverts whitish, irregularly barred across with greenish, the latter much more broadly; bill dark leaden grey, blackish at the point, lighter at the base; legs dark grey; iris bluish white. Total length 12 inches, culmen 1·7, wing, 6·3, tail 4·2, tarsus 1·1.

Adult Female. Exactly similar to the adult male, but easily distinguished by the black instead of scarlet moustachial stripe.

Young Male. Above green, duller than in the adults, mottled with transverse yellowish bars, and here and there a white spot; the head greyish, with scarlet tips to the feathers of the crown and nape; the eyebrow and cheeks longitudinally streaked with whitish, the ear-coverts less distinctly; the moustachial stripe and sides of the neck greyish black, spotted with whitish; throat whitish, and under surface of the body yellowish, all the feathers transversely crossed, and some of them edged with brown, producing a scaled appearance; flanks more distinctly blotched with brown; iris dark grey.

Young Female. Like the last, but paler and more mealy, not so much marked with brown cross-barrings on the breast, and the moustachial stripe not so plainly indicated.

The Green Woodpecker is very generally distributed throughout Europe, but does not seem to be found in Siberia. In some countries it is considered to be slightly migratory, but appears to breed in all the countries of political Europe, though how far it extends its range in Spain, and whether it really occurs beyond the Pyrenees, will be a question for future research to determine. It has been recorded by a great many observers as common in Spain and Portugal; but the specimen in the collection of our friend Mr. Howard Saunders is certainly quite a distinct species, and appears to us to be identical with the North-African *Gecinus levaillanti*.

Its geographical distribution in Great Britain during the breeding-season is given by Mr. A. G. More in his invaluable paper so often quoted by us:—"Not a common bird, but marked as nesting regularly in every county as far north as Derbyshire. In the north of Yorkshire it becomes scarce, and nests only occasionally in Durham and Northumberland.

"The Green Woodpecker is not included in either of the two lists which Mr. J. F. Brockholes has sent from Lancashire and Cheshire; but Mr. C. S. Gregson informs me that the bird breeds in the latter county. Mr. Gregson also states that 'the Green Woodpecker breeds in Barron Wood, Cumberland, close to the borders of Scotland,' and 'also in Westmoreland.' Dr. Heysham, however, only knew it as a rare visitor to Cumberland; nor is it marked in the lists which I have received from Mr. Gough and Mr. T. Hope."

It seems to be decidedly more common in the southern counties of England, and becomes gradually rarer as one goes northward. About eight years ago Sharpe used to observe it plentifully in Huntingdonshire; but Lord Lilford writes:—"In this neighbourhood (Lilford) the numbers of this species have very much decreased during the last few years, for no reason that I can discover, whilst *Picus minor* has become extremely abundant." In Middlesex Mr. Harting also considers it not so common as the last-named bird; and the same remarks apply to Berkshire, as noticed by Sharpe in the neighbourhood of Cookham. Mr. J. Brooking Rowe records it as

common all over Devon; and in Cornwall, says Mr. Rodd, it is "very common in the eastern woodlands; very rare in West Cornwall, and almost unknown in the neighbourhood of Penzance."

Respecting its distribution in Scandinavia, Nilsson writes:—

"It is pretty common in Skåne and the other provinces far up to the north. Near Gothenburg it is plentiful all the year round. I have also seen it north of the mountain-ridges, but only in the valleys and never on the fells." Mr. Robert Collett, in his excellent little work on the Ornithology of Christiania, states that the Green Woodpecker is found in most of the green woods in that vicinity, particularly such as are a little out of the way and contain old aspen trees.

Kjærbölling states that it "occurs all over Denmark where there are woods, but nowhere very common: it is more of a wanderer than a true resident." It has not yet been met with in Finland; and we are ignorant of the extent of its range in Russia. Meyer records it from Livonia. In Germany it is generally distributed, and common; and Mr. H. M. Labouchere writes to us:—"The Green Woodpecker frequents the pine-woods in the southern provinces of Holland;" and Mr. Keulemans informs us that it is seen throughout that country from September till the end of November. It breeds in some of the wooded localities in Guelderland and in the provinces near the German frontier, but is rarely found breeding in the western or more watery parts of Holland. "I do not know," he adds, "whether it is a resident or not; I myself have seen it in April as well as in November, but never in winter." De Selys-Longchamps says it is sedentary and common all over Belgium, as also does Godron in Lorraine. It is abundant all over France, being mentioned by Jaubert and Barthélemy-Lapommeraye as plentiful and resident in Provence. In Savoy Bailly says it appears about the end of March.

We have stated above the reasons why we are at present unable to include this species in the avifauna of Spain, though we think it most probable that it is found in that country, as well as the other species of *Gecinus*. From Italy Count Salvadori writes:—"This is the most common Italian Woodpecker, both in the mountainous districts and in the plains."

Dr. Giglioli, writing from the neighbourhood of Pisa, says:—

"The species of Woodpeckers I have observed are few. I found *Dryobates major* and *D. minor* pretty common; while the pine-forest called the Tombolo, which extends from here to Leghorn, resounds with the loud cry of the Green Woodpecker (*Gecinus viridis*)."

According to Professor Doderlein, this species is confined to the large woods of the central portion of Sicily, and is rather rare elsewhere. Lord Lilford tells us he only once saw this bird in Albania, never in Epirus or Corfu; the locality where it was observed was the river Dwin, in December 1857.

Lindermayer observes that in Greece "this Woodpecker is very rare, and is only found in those oak and chestnut groves which are at least 1000 to 1200 feet above the sea-level, and is therefore seen in the north of the island of Eubœa, in Akarnania, and Messina. It certainly does not occur on the islands of the Greek archipelago."

Messrs. Elwes and Buckley, writing on the Birds of Turkey, say that it is "common in all the woods of Turkey, and differs in no respect from English specimens." In Southern Russia, Von Nordmann says "it is not rare in Volhynia and Podolia, and very common between the Black Sea and the Caspian, but does not go high up in the mountains." Mr. H. J. Ross has

found the Green Woodpecker in great numbers at Trebizond, and states that he has shot them as high as Gumushkhaugh, which is between Erzeroom and Trebizond. Its further range to the eastward has yet to be discovered; but we may mention that it was not met with by De Filippi during his journey in Persia.

One of the best accounts of the habits that we have met with is given by Mr. Sterland in the 'Birds of Sherwood Forest,' as follows:—

"The Woodpeckers are peculiarly inhabitants of the forest; and that handsome species the Green Woodpecker (*Picus viridis*) is very abundant, our old decaying oaks being a favourite resort, and furnishing them with an ample supply of food. The light, sandy forest-soil is greatly frequented by ants; and here you are sure to meet with the Green Woodpecker. It is a shy species, and its white eye wears a peculiarly wild expression, while its singular cry, heard in the depth of the woods, has something very unearthly and startling about it. It is generally uttered while it is on the wing, making its odd, festooning flight from tree to tree—but not invariably so, as I have heard it both when clinging to a tree and when on the ground. The latter situation is only frequented where there are ant-hills, when it willingly leaves its strongholds the trees, to search for its favourite food.

"Its motions on the trees, for which it is so admirably fitted, are well worth watching. I never saw it by any chance perch on the upperside of a bough; but it is fond of clinging to the underside, where, during the day, insects chiefly congregate. It is on the perpendicular trunk, however, that it is most at home. Commencing at the base, it pursues a spiral course to the top, prying into every chink and crevice, tapping here and there with vigorous and rapid strokes to alarm its insect prey. I have remarked previously that nearly all the old oaks in the forest have suffered the loss of their tops by the agency of wind and lightening, aided by natural decay. Sometimes you may see the upper portion of one of these venerable trunks quite denuded of its bark, and riven with many fissures, though the tree is all the while in vigorous growth. On some of these I have often noticed the Green Woodpecker practise a singular feat. Placing its bill in one of the long cracks I have mentioned, it produces, by an exceedingly rapid vibratory motion, a loud crashing noise, as if the tree were violently rent from top to bottom. I have heard it when the sound was so loud and sudden that the woods rang again. For a long time I was at a loss to know how it was produced; but I one day witnessed the process, and have seen it several times since. It would effectually rouse up all the insects; for it seemed as if the tree quivered from top to bottom. Montagu mentions the jarring sound made by this species, but imagines it to be the call of both sexes to each other. With this I do not agree, but think from frequent observation that it is produced in the way I have mentioned, for the purpose of procuring food.

"The hole in which the eggs are laid is generally with us hewn through the sound outer portion of the trunk, until, at a few inches depth, the decaying wood is reached, in which the hollow for the eggs is formed; for nest there is none. I have met with one or two holes where the bird has evidently erred in its calculations. One in particular was about fifty feet from the ground, and had been begun in a tree too sound for the purpose; the hole was chiselled out of the solid wood, and must have cost its maker great labour, having been driven forward in a horizontal direction for about nine inches; but the wood continuing sound the bird had appa-

rently become disheartened in her work, and abandoned it. When I first discovered it, it had not been long deserted; for I took the trouble to climb up and carefully examine it, measuring the depth with my stick, and ascertaining by the sound that the wood at the bottom was free from decay. I could not help wondering how the bird, in a hole not larger than the diameter of its own body, could find room to give those violent strokes with its bill which would be necessary to penetrate the solid oak."

The following excellent note on the Green Woodpecker is given by Macgillivray in his 'History of British Birds':—

"Mr. Harley, of Leicester, has favoured me with the following characteristic account of its habits, as observed in his neighbourhood:—'The ornithologist desirous of becoming acquainted with the habits of the Green Woodpecker in this country, must repair to the hedgerow tree, the elm, the decayed ash, and the ranpikes of the solitary forest oak, and not to the verdant shades of Grooby or Newtown, or the more impenetrable woods of Sheet Hedges. It sometimes approaches the habitations of man, and I have seen it within a few yards of the buildings of our populous town. On the 16th of April, 1834, at five o'clock in the morning, I had a good view of a pair of these birds, as they were at work on an ant-hillock at the foot of some lofty elms. I remarked the loud sonorous note of the male to proceed from him equally when on the hillock and when on the hole of the tree, to which both he and his partner always resorted when the least danger was apparent or any unusual noise was made. The elm is the most common tree within a few miles round Leicester; and on its bark the Green Woodpecker appears happy and at home. Its flight is undulating; but the last undulation, before the bird alights on the hole of the tree, is much longer than the first. I have never seen it descend the tree after the manner of the Nuthatch, nor have I reason to think it ever does so. Some authors, in their history of this bird, speak of its carrying away the chips from the foot of the tree in which it has been preparing a place for its offspring; but, although such may be the case, I have never, after a very minute search, seen either male or female removing the chips, which, on the contrary, I have always found in profusion near their holes. This bird never uses masonry, as the Nuthatch does, at the mouth of the holes which it chooses for nidification. I have never found any appearance of nest, excepting the decayed wood, on which were laid from five to seven delicate and beautiful white eggs.

"'I am not aware of any seasonable difference in the note of the male, save and except in the vernal months, when he is more clamorous, and much more frequently repeats his shout. The loud laugh the *plui-plui-plui* is the same, not varying in cadence, throughout the spring, and perhaps the summer months. I never saw it scratch when on the ground, even on the most sandy soils; but I have repeatedly noticed it thrust its powerful beak into the ant-hillocks, after the manner of the Rook, and most probably to obtain the eggs as well as the perfect ants. This habit of the bird will account for its bill being often found covered with earthy and miry substances.'"

Mr. Keulemans writes, "I have often seen this bird in the public parks near the towns in Holland, feeding on ants and their chrysalides, which are found at the roots of the trees. I once came upon one engaged in picking up ants so ravenously that it scarcely observed my approach, and, to judge from the quick motions of the bird, it must have devoured at least a hundred

during the time I was watching it. The species is often seen on the ground, jumping actively in the grass, sometimes for very long distances."

Bailly gives the following account of its note:—

"The Green Woodpecker generally appears in Savoy about the end of March. The male then utters its amatory note, which may be expressed by the words *tiô-tiô-tiô-tiô*, uttered up to fifteen times in rotation in a shrill tone. These cries, which are heard on the first fine days we have after the end of February, are plaintive, and may be heard at some distance, particularly about the middle of April, when they acquire their full natural force. Besides these cries, which are peculiar to the male during the nesting-time, others are heard which are equally peculiar to the female; these are very short and quick, as if itself was in danger, or seeing its progeny menaced. These cries, which are different from the former ones, are like the words *tiâkakan, tiâkakan*."

Mr. Hewitson writes concerning its breeding-habits:—

"The Green Woodpecker builds its nest in the trunks of trees, frequently at a considerable height above the ground. In Norway, where the churches are chiefly of wood, we noticed one of these birds which had chosen for its nest the elevated situation of the spire, in the side of which it had most irreverently bored its hole."

From Dresser's note-book we extract the following remarks:—

"They form their own nest in some tree which is so far rotten that they can work at it without much difficulty, and generally make their hole at some height, although occasionally they are to be found not more than ten or twelve feet from the ground. I have on two occasions taken nests in alder trees not above nine feet above the ground. The entrance is circular, and the nest extends often to a considerable depth below it; in some instances the eggs can scarcely be reached when the arm is inserted in the hole beyond the elbow. The interior of the breeding-place is smooth, and increases in size towards the bottom. The eggs, generally six or seven in number, are deposited on the small chips which are left at the bottom of the hole."

Occasionally the birds bore their hole in a sound tree; and an instance is given by Mr. Harting in his 'Birds of Middlesex':—

"An instance of the wonderful and rapid way in which the Woodpecker can cut out a hole in a tree has lately come under my notice. A young collector, who was anxious to obtain some eggs of this species, watched a pair of birds almost incessantly from the time they commenced excavating till the first egg was laid. At five o'clock one Friday morning he saw the hen bird alight upon an oak, at about ten feet from the ground, and pick off a piece of bark about the size of a shilling, and fly away with it. This manœuvre was repeated several times. Both birds then laboured at the tree to make a hole, and by seven o'clock on the following Sunday morning they had cut through two inches of wood, and made a hole eight inches deep, in which at the hour last named a single egg was found. This tends to prove that the Woodpecker, in selecting a tree in which to deposit its eggs, does not always make use of one which is unsound."

The Green Woodpecker, though a thoroughly inoffensive bird, is not always allowed to retain peaceful possession of its chosen abode. Mr. Gould says:—"In the spring the Green Woodpecker becomes very garrulous and noisy, and thus often betrays the site of its breeding-place, in a hole of some upright stately tree, to which it returns again and again for many years,

unless it be displaced by the Starling, against which bird it is ever on the watch. The Duke of Argyll informs me that in Cliveden woods he has seen the Green Woodpecker sit motionless for hours together at the entrance of its hole to prevent its being occupied by a pair of Starlings which infested the neighbourhood." Mr. G. Dawson Rowley, in a letter to 'The Ibis,' dated from Brighton the 10th of November 1860, observes:—"In the spring the rain prevented many birds from breeding. I witnessed the efforts of a pair of *Picus viridis* to do so. Once they were driven out by Starlings; twice, after cutting deep holes with great labour, the wet obtained an entrance and filled the chamber; at last they gave up in despair."

Respecting the nature of the food of the Green Woodpecker, we translate the following interesting note communicated to the 'Journal für Ornithologie' (1854, p. 181) by Mr. L. Martin, of Berlin:—"It would be most interesting if we could but ascertain what some of our well-known birds at times find it necessary to feed on. They may be led to eat certain food which at other times they cannot make use of, either when food is wanting or some particular article of food is by chance found in unusual abundance. A curious and welcome instance of this nature will doubtless be that of a *Picus viridis* which some winters ago was brought to me. Its stomach was filled entirely with a species of fly which I do not quite know, and which was scarcely larger than a common house-fly. I counted, of those that could be distinguished, ninety-two flies. These must certainly have been to some extent, if not entirely, living in a community, or were at least collected together during the winter, and through some lucky chance the Woodpecker found out their retreat, and had either opened an entrance with his powerful beak, or perhaps had but little trouble in bringing them out with his long tongue."

Naumann, writing about its food, says as follows:—

"Its chief food is at all seasons of the year, but more particularly in the summer, ants and their pupæ (so-called ant's eggs) of different sorts, viz. the yellow ant (*Formica rubra*), the brown ant (*Formica fusca*), the black ant (*Formica nigra*), and the red wood-ant (*Formica rufa*), seldom, however, the horse-ant (*Formica herculeana*). . . . It also finds in the ant-hills the larvæ and pupæ of *Cetonia aurata*, which, together with many others of the ground-beetles, it eats with avidity, and often visits the fresh-mown meadows, where it hops about and bores holes in the ground, so wearing its nasal bristles in doing this that they get quite thin, and in the summer do not even cover the nostrils. . . . It sometimes attacks the wasps' nests for the sake of the larvæ."

Mr. Stevenson, writing from Norwich, has the following little note in his 'Birds of Norfolk':—

"Mr. T. E. Gunn, of this city, assures me that on one occasion he discovered small fragments of acorns in the stomach of a Green Woodpecker—which agrees with the statement of Naumann that, besides insects and their eggs, acorns also form an occasional article of diet. Bechstein, moreover, asserts that they will crack nuts."

Dr. E. Hamilton informs us that "these birds, if not disturbed, will come day after day to the same haunts and regularly hunt the trees, following the same regular plan, never missing a tree, and coming at the same time daily, almost to a minute. It is particularly partial to oaks and sycamores, and always begins at the bottom of the tree, examining every part most carefully."

The eggs of the Green Woodpecker are white, and four or five in number, and varieties are

of very rare occurrence. Specimens from Dresser's collection, taken by him near Cilli, in Styria, measure $1\frac{10}{40}$ inch by $\frac{37}{40}$ inch, and are pure white in colour—the texture of the shell being very smooth, giving the egg a very glossy appearance. They taper slightly towards the larger, and rather more so towards the smaller end.

Mr. Stevenson has given a concise account of the celebrated varieties in Professor Newton's collection, which we quote entire from the 'Birds of Norfolk':—"In the 'Zoologist' for 1848 (p. 2229) Mr. Alfred Newton described some eggs of the Green Woodpecker found in the neighbourhood of Elveden (Suffolk) during the previous spring, as abnormal in their colouring as the plumage of the bird just referred to. After stating that 'the hen bird was in the hole when it was cut open' (lest any doubt should arise as to the species these eggs belonged to), he says, 'Except in size, shape, and high polish, they do not at all resemble the eggs commonly laid by this bird, being blotched and spotted with reddish brown and tawny yellow, so as to be something like those of the Common Quail, or that of the Baillon's Crake, as figured in Hewitson's illustrations.' Again, in the 'Zoologist' for 1850 (p. 2923), Mr. Newton writes, 'I have again, this year, obtained some eggs of the Green Woodpecker, coloured like those of which I sent you an account two years since; they were taken from a nest in an elm tree. . . . From their having been taken near the place where the coloured eggs were found in 1848, they are all probably the produce of the same bird.' From a correspondence which ensued upon these notices, it will be seen that Mr. Newton at first, judging from the localities in which they were taken, had great doubts whether the colouring matter on these eggs could be owing to any fungoid juices or the stain of rotten wood; but he now, I know, fully concurs with Mr. Hewitson's opinion thus given in the 3rd edition of his 'British Birds' Eggs':—'Mr. Newton has kindly sent me a drawing of the coloured eggs of this species, mentioned by himself and others in the 'Zoologist.' It is smeared over in the same manner as the eggs of the Grebes, and, I have no doubt at all, arises from a vegetable stain.' Having also had the opportunity of examining some of these peculiar specimens in the cabinets of Mr. Newton at Cambridge, and Mr. Newcombe at Feltwell, I can only say that, whatever may have been the cause of their unusual colouring, they suggest at once the idea of some external stain, and remind one of those strange-looking Swans' eggs occasionally met with in a marshman's cottage, which owe their rich unnatural tints to the 'gude wife's' patience and an onion-peeling."

The Green Woodpecker appears to be more or less migratory in some countries, but nowhere, as far as we can learn, to any great extent. Mr. Stevenson observes in the before-mentioned work:—"The sharp winter of 1860–61 was remarkable for the very large quantity killed in different parts of the county, one bird-stuffer in Norwich having between twenty and thirty brought in for preservation during a short period of severe frost; but, with this single exception, I have never known these birds to suffer much from the severity of the weather, or to present themselves, even at such seasons, in more than their ordinary numbers. Their simultaneous appearance in such extremely unusual numbers seemed almost to suggest a migratory movement; yet I know of no trustworthy facts which would justify me in classing this Woodpecker with such resident species as receive foreign additions in autumn."

Mr. Yarrell has given a learned disquisition concerning the different names by which the Green Woodpecker has been known; and we think it of sufficient interest to be transcribed literally:—

"The various names by which our Green Woodpecker is known in different parts of this country invite observation. Wood-spite, which I have also seen spelled Wood-speight, is not intended for our English words wood and spite; the first syllable is derived from woad, in reference to the green colour of the bird, and the second syllable is derived from the German word 'specht,' a Woodpecker: Grünspecht is in Germany the name of our Green Woodpecker.

"Rain-bird has been already noticed. Wallis, in his 'History of Northumberland,' observes that it is called by the common people Rain-fowl, from its being more loud and noisy before rain. The Romans called them *Pluviæ aves* for the same reason.

"Hew-hole is sufficiently explained by the well-known habit of the bird.

"Yaffle or Yaffil. The Green Woodpecker is so called in Surrey and Sussex. This name has reference to the repeated notes of the bird, which have been compared to the sound of a laugh. White, of Selborne, says 'the Woodpecker laughs;' and in the popular poem of 'The Peacock at Home' the following couplet occurs:—

"'The Skylark in ecstasy sang from a cloud
And Chanticleer crow'd, and the Yaffil laugh'd loud.'

"In some parts of Hertfordshire, and of the adjoining county of Essex, the Green Woodpecker is called a Whet-ile. The word Whittle is a term at present in use in some northern counties. Brockett, in his 'Glossary of North-country Words,' considers it derived from the Saxon 'whytel,' a knife. In Yorkshire and in North America a whittle is a clasp-knife, and to whittle* is to cut or hack wood; the origin and the meaning of the Woodpecker's name are therefore sufficiently obvious: Whytel, Whittle, Whetile, Woodhacker.

"The terms Woodwele, Woodwale, Woodwall, and Witwall, which are only modifications of the same word, are generally considered to refer to one of the species of our English Woodpeckers, but to which, or, I may add, if to either, there is some doubt.

"Willughby and Ray apply the name of Witwall to the Greater Black and White, or Greater Spotted Woodpecker; and in the New Forest, Hampshire, at the present day, this same bird is called Woodwall, Woodwale, Woodnacker, and Woodpie. The word occurs occasionally in old ballads:—

"'The Woodwele sang and would not cease,
Sitting upon the spray,
So loud he wakened Robin Hood
In the greenwood where he lay.'—*Ritson's Edition of Robin Hood,* vol. i. p. 115.

"'In many places Nightingales,
And Alpes† and Finches and Woodwales.'—Chaucer, *Rom. of the Rose.*

"'There the Jay and the Throstell,
The Mavis menyd in her song,
The Woodwale fard or beryd as a bell,
That wode about me rung.'—*True Thomas.*

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* See Webster's 'Dictionary,' and both series of 'The Sayings and Doings of Sam Slick, the Clockmaker.'

† An old name for the Bullfinch.

"In the Glossary to the work first quoted, the Woodwele is thus described:—'The Golden Ouzle, a bird of the Thrush kind.—P.' The initial P. is probably intended to refer to the works of Pliny. In the English portion of Ainsworth's Dictionary, the corresponding term for Whitwall is *vireo*; and Dr. William Turner, an English physician, and an accurate observer of birds, who wrote in the time of Henry the Eighth, makes *vireo* to be the Golden Oriole, including in his synonyms the Greek word *chlorion*, also in reference to colour, and the German names Wittwol and Weidwail, but remarking that he had never seen this bird in England, though he had seen it very often in Germany. *Galbula*, another term applied to the Golden Oriole, is, in Ainsworth's Dictionary, 'a bird which we call a Wittwall or Woodwall.—*Mart.*' *Galbula* is a diminutive from *galbus*, signifying yellow. Killian interprets the Belgic word 'weed wael' as *galgulus* (*avis eadem quæ galbula*, Plin.), *avis lurida*, *oriolus*. He also refers to the German word 'wette Wal,' or 'weet Wal,' which is applied to the Golden Amsell, or Yellow Thrush, two other names for the Golden Oriole. Although these references would seem to identify the Golden Oriole as the Woodwele, yet the remark of Dr. Turner, and our own knowledge of the rarity of the Golden Oriole in England, afford alone presumptive evidence that the 'Woodwele singing from the spray,' the bird which woke Robin Hood, could not have been the Oriole. A ballad-writer, wishing of course to be generally understood, would introduce some bird of general occurrence. Harduin translates *vireo* into *verdier*, which, according to Buffon, is the Greenfinch; and Ainsworth gives Greenfinch as a translation of *vireo*. The Greenfinch certainly does not sing very loud, but your freebooters are probably very light sleepers. In an English and German Dictionary, composed chiefly from Johnson and Adelung, the word corresponding to Woodwall is Grünspecht, which, as before noticed, is our Green Woodpecker. There seems to be no doubt that the colour of the Woodwell was greenish yellow; and this name, with its various modifications, may therefore apply to the Green Woodpecker, the Golden Oriole, or the Greenfinch. The objections to the Green Woodpecker are, that his notes can scarcely in poetical licence be called a song, and, moreover, that they are most frequently uttered when the bird is on the wing.

"The derivations in the present instance, through the assistance of a learned friend at Cambridge, who is kind enough to interest himself in the character and success of this History of our British Birds, might have been carried much farther, but it may perhaps be considered that enough has already been said here upon this subject."

With respect to the way in which this bird is supposed to foretell rain, Nilsson writes:—

"In Norway, where it has the name of *Gertrudsfogel*, I am assured by an excellent meteorologist that it prophesies the state of the weather at about three days ahead. If its call is low and monotonous, the weather will be fine; but if it calls loudly, there will be rain and storm; and if it comes near habitations and calls, then the weather will be still worse."

Mr. J. H. Gurney, jun., sends us the accompanying account of a curious vulgar superstition respecting the present bird:—"The following is from Aubrey's 'Natural Remarques on the county of Wilts, 1685.' He was a correspondent of Ray's, who in a letter dated 'Black Notley, 8^{br} 27,—91,' alludes to this story as a fable.

"'Sir Bennet Hoskins, Baronet, told me that his keeper at his parke at Morehampton, in Herefordshire, did for experiment sake drive an iron naile thwert the hole of the Woodpecker's

nest, there being a tradition that the damme will bring some leaf to open it. He layed at the bottome of the tree a cleane sheete, and before many hours passed the nail came out, and he found a leafe lying by it on the sheete.'"

Varieties of the Green Woodpecker are occasionally met with; thus Mr. Stevenson writes:—

"A very singular and beautiful variety was killed at Hedenham, in December 1852, which is now in the collection of Mr. J. H. Gurney, who thus described its peculiar plumage in the 'Zoologist' (p. 3801):—'It exhibits some remarkable variations from the usual colouring of this species, especially on the rump, the feathers of which (including the upper tail-coverts) are in this specimen all margined and tipped with a beautiful flame-coloured red, instead of with the usual edging of yellow. The feathers at the lower part of the back of the neck are also similarly tipped with red, while those on the back are pointed with the beautiful golden-yellow edgings which usually characterize the feathers of the rump; and a similar yellow pointing is to be observed on the ends of the feathers forming the three lower rows of the wing-coverts. The other parts of the plumage do not differ from ordinary specimens.' That this strange intensity of colouring, however unique in a British specimen, is occasionally met with in other countries, is shown by the following interesting remarks of Mr. Robert Birkbeck, in the 'Zoologist' for 1854 (p. 4209), under the title of 'Notes on the Birds of Italy and Sicily.' Speaking of the Green Woodpecker, he says:—'In the Museum at Pisa I observed three or four specimens with the feathers on the rump and neck quite flame-coloured, and those on the back of a bright yellow, similar to the specimen noticed by Mr. Gurney in the 'Zoologist.' Some were brighter in colour than others. I think that they were distinguished as varieties of *P. viridis*.'" Mr. J. H. Gurney, jun., has likewise lent us some curious varieties, concerning which he writes:—

"I have lent you one in which the tips of the wings and tail are brown. It was recorded in 'The Naturalist' (No. 10) by Mr. Gunn. He has since had another, and in 'The Zoologist' (p. 271) he says:—'I have *frequently* observed examples of the Green Woodpecker having this reddish brown or rusty hue on the tips of the wings and tail.' Smith notices it in his 'Birds of Somersetshire' (p. 250)."

We cannot help remarking that the supposed variation of brown wings to which Mr. Gurney has referred, and which is represented in his collection, is caused by the bleaching and abrading of the feathers from constant friction, and is not a decided abnormality. At the same time we cannot account for a curious appearance which is to be seen on the back of some specimens and looks like a wearing of the plumes; it may possibly be the remains of the young plumage on the birds assuming the adult dress in the spring without a moult.

The descriptions of the adult birds are taken from a pair in our collection, the male from Reading and the female from France. This old male is figured in the Plate; and as the female is exactly the same, excepting as regards the red moustache, we thought it better to give an illustration of the young bird, which is not so well known. The immature specimen described and figured is in the collection of Messrs. Salvin and Godman, and is from Norway. We have characterized it as a young male; but we are not quite sure whether the differences exhibited between this bird and an English specimen in Mr. J. H. Gurney's collection, sexed as a female and described above as such, are due to age or to climate, and we regret that we had not a larger series of Scandinavian specimens for comparison.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Near Reading, Berks, February 5th, 1870 (*C. Howlett*). *b*. ♀. Cookham, Berks, November 17th, 1869 (*J. Ford*). *c*. ♀. France (*Fairmaire*). *d*. Farnborough, Kent (*H. E. D.*).

E Mus. Salvin and Godman.

a. *b*. Tanhurst, Surrey, February 1857 (*F. G.*). *c*. Bargate, Surrey, 1857 (*F. G.*). *d*. Norway, June 29th, 1866 (*J. Baker*). *e*, *f*. Hendon, Middlesex, 1854 (*O. S.*)

E Mus. J. H. Gurney, jun.

a. ♀. Hethersett, near Norwich (*Gunn*). *b*. ♀. Hempstead, near Norwich, June 2nd, 1866 (*H. M. Upcher*). *c*. St. Petersburg, September 24th, 1869 (*J. H. G.*). *d*. ♀ *juv*. Norwich, June 1868 (*Gunn*). *e*. Near Norwich, with the two centre tail-feathers abnormal (*Gunn*). *f*. ♂. Wymondham, March 1864, with brown wings (*Gunn*). *g*. ♂ *juv*. Earlham, 1864, with deformed bill (*Gunn*).



SHARPE'S GREEN WOODPECKER.

GECINUS SHARPEI

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GECINUS SHARPII.

(SHARPE'S GREEN WOODPECKER.)

Gecinus sharpii, Saunders, P. Z. S. 1872, p. 153.
Gecinus viridis auct. (ex Hisp. merid.).

♂ suprà viridis, uropygio et supracaudalibus lætissimè aureo-flavis, vix aurantiacis: tectricibus alarum dorso concoloribus, sed paullò olivaceo lavatis: remigibus et alâ spuriâ nigricanti-brunneis extùs albo, basin versùs pennarum sordidè viridi maculatis, secundariis viridibus tectricibus concoloribus: caudâ nigricante, basin versùs olivaceo lavatâ, rectricibus duabus centralibus et extimis brunneo et viridi alternè transnotatis: pileo et vittâ latâ malari lætè coccineis: facie laterali cinereâ, loris et genis anticis vix nigricantibus: regione paroticâ et collo laterali pallidè viridibus: subtùs flavescens, hypochondriis viridi lavatis: subalaribus albis, flavo lavatis, nigro irregulariter transfasciatis: rostro nigricanti-corneo, mandibulæ basi lætissimè flavâ: pedibus saturatè plumbeis: iride cærulescenti-albâ.

♀ mari similis, sed vittâ malari nigrâ distinguenda.

♂ *juv.* viridis, dorsi plumis albido indistinctè transnotatis: subtùs albicans, gutture minutè, corpore reliquo subtùs magis distinctè fusco transnotatis: pileo et fasciâ mystacali coccineis.

♀ *juv.* mari similis, sed fasciâ mystacali fuscâ distinguenda.

Adult Male. Above green; lower part of back rather lighter; rump and upper tail-coverts bright yellow, almost inclining to orange; crown of head to the hinder part of the nape slate-grey, closely streaked with brilliant crimson, which streaks are confluent on the nape; lores, eyebrows, and the region round the eye slate-grey; a broad malar stripe crimson; hinder part of the ear-coverts, sides of neck, and entire underparts pale greenish grey, inclining more to pale yellowish-green on the abdomen; wing-coverts the same as the back; the primary coverts brown, with a greenish tinge, each feather with several pale brown spots; quills dark brown, the external web barred with whitish on the outer quills, and with pale greenish-brown on the inner primaries, the inner web being barred with dull white; secondaries with the outer web the same colour as the back, and the inner web dark brown, barred with white; under wing-coverts white, barred with dark brown; tail dark brown, washed with greenish, and indistinctly barred with paler brown; under tail-coverts grey, with a greenish tinge; bill dark lead-grey, blackish at the point, the under mandible being yellowish at the base and to over half its length; legs dark grey; iris bluish white. Total length 10·8 inches, culmen 1·5, wing 6·3, tail 4·2, tarsus 1·1.

Adult Female. Similar to the male, but having the moustachial stripe black instead of crimson.

Young. Is very similar indeed to the young of *G. viridis*; but even at this early age it shows the grey sides of the face, which are the chief characteristics of the species. It differs from the adults in being mottled all over the back and breast; and the young male is distinguished from the young female by its red moustache.

The present species was, until quite lately, considered identical with the common Green Woodpecker; and former authors writing on Spanish ornithology have referred to it as such. Its

range is very restricted, as will be seen from the following note kindly communicated to us by our friend Mr. Howard Saunders, who first described this bird:—"This species would seem to take the place of true *G. viridis* throughout the whole of that portion of Spain which lies south of the Guadarrama; and in all probability its range extends to the valley of the Ebro. It will be interesting to learn whether it reaches to the foot of the Pyrenees on the Spanish side, inasmuch as all specimens which I have examined from the French side belong to true *G. viridis*. When I published my list of the birds of Southern Spain in 'The Ibis,' 1871, p. 65, I erroneously described this species as *G. viridis*. Its note seems to be very similar; but in a series of some fifty or sixty eggs I have noticed that on the average those of the present species are a trifle smaller than those of its congener. My specimens are from Valencia, Granada, Andalucia, and Castilla, showing that it is a generally distributed, and not a mere local form."

Major Irby has also kindly sent us the following note:—"With regard to this Woodpecker I can only say that in habits, note, and nesting it is exactly similar to *Gecinus viridis*. I have never found it in the vicinity of Gibraltar; indeed I have only met with it in the Coto del Rey and Coto de Doñana, near Seville; it is most abundant in the former, and appears to be a very local bird. After you told me of your discovery of the difference between it and *G. viridis*, I went to the Coto del Rey in January 1872, and succeeded in getting six specimens. When there in April and May 1859, I recollect it was much more common, and I shot an old male, which, as Lord Lilford and I both thought it to be *G. viridis*, we threw aside. I also found a nest, but did not take it. As all my notes to you are the result of personal observations, I will not trouble you with the names of museums in which I have seen this species, as there is no certainty of the localities from which the specimens came."

We are further indebted to Lord Lilford for the following note:—"If this species is, as I believe it to be, the Common Green Woodpecker of Central Spain, I found it very abundantly about Aranjuez and near Madrid in 1865, and obtained many eggs from the former locality, though I never took the trouble to shoot a specimen. Its habits appear to resemble very closely those of our British *Gecinus viridis*; but it is perhaps a trifle more noisy and restless, and not so difficult of approach. I obtained many specimens this year in the Cotos, below Seville, where it is very common. It appears to avoid the pine-woods, and to haunt chiefly the comparatively open country dotted with cork, white poplar trees, willows, &c. Manuel de la Torre, so often mentioned by me in 'The Ibis,' brought me a male and female of the present species shot near Arganda, in New Castile, in April of this year, which fact goes in support of my view that this is the Common Green Woodpecker of Central Spain, as it undoubtedly is of the south of that country. I did not meet with *any* Green Woodpeckers in the Basque provinces, or in Arragon in 1867; but my stay in those parts was very short, and of course I cannot say that this bird may not be met with in them. I did not meet with it on the north side of the Guadarrama range during our stay at San Ildefonso in 1865. This year we found many fully fledged young birds in the Coto de Doñana between the 10th and 15th of May. The usual number of eggs appears to be five."

The figures in the Plate have been taken, the adult birds from a pair given us by Major Irby, the young from a specimen lent to us by Mr. Howard Saunders; and the descriptions are taken from the same birds.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, ♂, ♀. Coto del Rey, Seville, January 11th, 1872 (*L. H. Irby*). *c, juv.* Seville (*Lord Lilford*).

E Mus. Lord Lilford.

a, b, c. Seville (*L.*).

E. Mus. Howard Saunders.

a, ♂ (type of species). El Pardo, Madrid. *b*, ♀, *ad.* Granada, 12th of June. *c, juv.* Granada, 12th of June. *d*, ♀. Valencia. *e, f.* Coto de Doñana, Seville. (*H. Saunders.*)



ALGERIAN GREEN WOODPECKER.

GECINUS VAILLANTII

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GECINUS VAILLANTII.

(ALGERIAN GREEN WOODPECKER.)

Chloropicus vaillantii, Malh. Cat. rais. des Ois. de l'Alg. Mém. de la Soc. d'Hist. Nat. de Metz, p. 5 (1846).
Gecinus vaillantii, Bonap. Conspectus, p. 126. sp. 3 (1850).
Gecinus algirus, G. R. Gray, Cat. Brit. Mus. (1848).
Picus algirus, Levaill. jun., Expl. Scient. de l'Alg., Atl. Ois. pl. 8 (1848–49).
Gecinus algirus (Levaill. jun.), Reich. Hand. spec. Orn., Scans. p. 348, pl. 4134 (1851).
Gecinus vaillantii (Malh.), Bonap. Conspectus, p. 126. sp. 3 (1850).

Figuræ notabiles.

Levaill. jun., *l. c.*; Reichenbach, *l. c.*; Malherbe, Monogr. des Pic. pl. lxxxii.

♂ *ad.* suprà viridis, uropygio et supracaudalibus latissimè aurantiacis: subtùs griseo flavescens, uropygio et subcaudalibus pallidè brunneo transfasciatis: pileo lætè coccineo: nuchâ versùs dorsum et collo versùs nucham aurantiacis: remigibus et alâ spuriâ nigricanti-brunneis, in pogonio externo sordidè brunnescente albo notatis: caudâ nigricante, pallidè brunneo transfasciatâ et viridi lavatâ: facie laterali cinereâ, loris nigricantibus, vittâ mystacali nigrâ: rostro nigricanti-corneo, mandibulâ flavâ, versùs apicem corneâ: pedibus saturatè plumbeis: iride cærulescenti-albâ.

♀ *ad.* mari similis, sed pileo nigricanti-griseo, et nuchâ coccineâ.

Adult Male (Algiers, 1873). Upper parts green, fading into yellow towards the rump, which is bright yellow shot with flame-colour; crown and nape rich crimson, the base of the feathers, which shows very little, being slate-grey; lower part of the nape and sides of the neck at the back rich flame-yellow; quills dark brown, the outer web barred with yellowish white, secondaries with the outer web similar to the back, and the inner web dark brown, indistinctly barred; wing-coverts similar to the back; primary coverts greenish brown, barred with dull light brown; tail dark brown, washed with greenish, and indistinctly barred with paler brown; sides of the face, region round and above the eye and auriculars slate-grey; lores blackish; moustachial stripe black; chin and upper part of the throat pale greyish; sides of the neck pale apple-green, or yellowish green; underparts pale greenish grey, on the lower part of the abdomen and on the under tail-coverts indistinctly barred with brown; under wing-coverts white, barred with dark brown; bill dark lead-grey, blackish at the point, the under mandible yellowish at the base and to nearly two thirds of its length; legs dark grey; iris bluish white. Total length 11·8 inches, culmen 1·6, wing 6·1, tail 4·05, tarsus 1·1.

Adult Female. Similar to the male, having also a black moustachial stripe; but the crown is slate-grey, the feathers being blackish grey towards the tip, and the nape only crimson; nor are the sides of the neck near the nape flame-yellow, but grey, washed with greenish yellow; the underparts are almost uniform greenish grey, having very indistinct bars on the under tail-coverts.

Obs. Of all the Green Woodpeckers, this bird most closely resembles *G. sharpei*, but is clearly distinct

from that species, the male having the moustachial stripe black instead of red, the crown much more crimson, and the nape and lower sides of the neck orange or flame-yellow; and the female, instead of having the crown grey streaked with crimson as in *G. sharpei*, has only the nape crimson, and the crown blackish grey. Like *G. sharpei* both sexes have the region round the eye and the face grey, and not black as in *G. viridis*.

This North-African representative of our common European Green Woodpecker is a very local species, being met with only in North-west Africa, Algeria being its head quarters. Mr. Taczanowski met with it in the province of Constantine, where, he states, though found almost everywhere in the forests, it is nowhere numerous. Mr. C. F. Tyrwhitt Drake observed it on the Tetuan mountains; and Major Loche writes that "it is tolerably numerous in Algeria, where it takes the place of the European *G. viridis* and *G. canus*, neither of which has yet been met with in Algeria. It is most numerous in the cedar forests of Teniet-el-Had, Belezema, Bathna, Ammi-Moussa, and the wooded portion of the Beni-Menasser country. It feeds on larvæ and insects, is very partial to ants, and may often be seen seeking for them and other insects amongst the fallen leaves; it climbs with great facility, and moves head downwards as easily as in the ordinary way." His description of the habits agrees closely with that I have given of *Gecinus viridis*, which species, Canon Tristram also writes, it closely resembles in habits, note, and mode of nidification. Loche states that the present species makes its nest in natural holes of trees, and only when it does not find one convenient for the purposes of nidification does it hack one out itself, and usually selects half-rotten trees, which are more easily penetrated. The nest-hole is usually very deep; and in it are deposited four or five pure white, glossy eggs, measuring about 27 by 19 millimetres.

The adult male figured and described is in the collection of Mr. E. Cavendish Taylor, and the female in my own collection, both having been obtained in Algeria.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Algeria (*Verreaux*).

E Mus. E. C. Taylor.

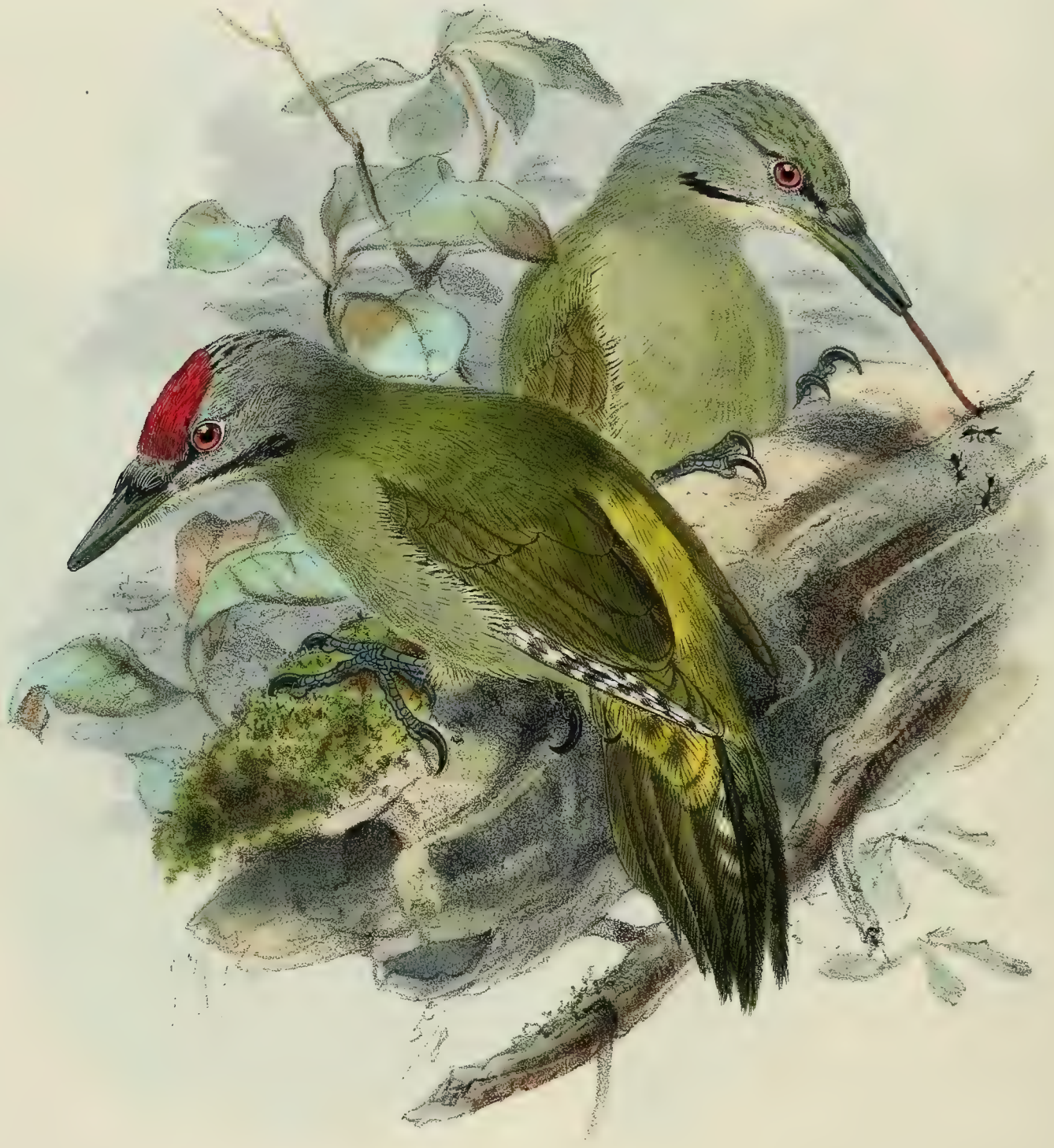
a, ♂. Algeria, 1873 (*E. C. T.*).

E Mus. O. Salvin.

a, ♀. Kef Laks, Constantine, April 21st, 1857 (*O. S.*).

E Mus. H. B. Tristram.

a, ♀. Batna (*Verreaux*).



GREY-HEADED GREEN WOODPECKER.

GECINUS CANUS

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GECINUS CANUS.

(GREY-HEADED GREEN WOODPECKER.)

Picus canus, Gm. Syst. Nat. i. p. 434 (1788, ex Edw.).
Picus norvegicus, Lath. Ind. Orn. i. p. 236 (1790).
Picus viridi-canus, Meyer & Wolf, Taschenb. Vogelk. i. p. 120 (1810).
Picus chlorio, Pall. Zoogr. Rosso-As. i. p. 408 (1811).
Picus caniceps, Nilss. Orn. Suec. i. p. 105 (1817).
Gecinus canus, Boie, Isis, 1831, p. 542.
Chloropicus canus, Malh. Monogr. Pic. ii. p. 124 (1862).

Pie cendré, French; *Carpintero*, Spanish; *Grauspecht*, German; *Grahöfdad Hackspett*, Swedish; *Graaspet*, Norwegian; *Harmajapää Tikka*, Finnish; *Dyatell siedoi*, Russian; *Drieçiot zielonosuoy*, *Zotna zielonosuva*, Polish.

Figuræ notabiles.

Edwards, Nat. Hist. Birds, ii. pl. 65; Werner, Atlas, *Zygodactyles*, pl. 202; Naum. Vög. Deutschl. v. pl. 133; Gould, B. of Eur. iii. pl. 227; Kjærb. Orn. Dan. pl. ix. fig. 2; Schl. Vog. Nederl. pl. 49; Reich. Hand-b. Pic. pl. dcxx. figs. 4135–36; Malh. Monogr. Pic. iv. pl. lxxxi.; Bree, B. of Eur. iii. p. 136; Sundev. Sv. Fogl. pl. xxii. fig. 3.

♂ *ad.* pileo antico lætè coccineo: pileo postico et laterali sordidè cano, illo vix virescente lavato: regione oculari paullò albido vario: loris nigricantibus: setis nares obtectentibus saturatè canis, nigro terminatis: vittâ mystacali nigrâ: dorso viridi, uropygio et supracaudalibus lætè flavicantibus: tectricibus alarum minimis dorso concoloribus, reliquis magis olivascentibus: alâ spuriâ et primariorum tectricibus brunneis, extùs maculis albicantibus viridi lavatis notatis: remigibus brunneis, extùs albido maculatis, primariorum interiorum maculis viridi lavatis, secundariis viridioribus, obsoletè viridi transfasciatis: caudâ brunneâ versùs apicem cinerascente, rectricibus nonnullis exterioribus flavo apicatis, duabus centralibus obsoletè cinerascente transfasciatis: subtùs pallidè viridis, gutture canescente: subalaribus albidis, brunneo transfasciatis: alæ facie inferiore albido et brunnescente regulariter et alternatè transfasciatâ: rostro plumbeo, ad basin mandibulæ viridi-flavo: pedibus viridescenti-plumbeis: iride rubro-brunneâ.

♀ mari omninò similis, sed pileo cano, coccineo absente.

♂ *hornot.* similis feminæ adultæ, sed pileo magis viridi lavato, parte anticâ plumis paucis coccineis aut aurantiacis variâ.

Adult Male. Entire head and neck grey, the plumes covering the nostrils tipped with black; fore part of the head bright crimson, the hinder part of the crown slightly streaked with blackish; feathers round the eye whitish; lores blackish, as also a moustachial stripe; back green, a faint shade of which colour pervades the grey nape and hinder neck; the lower back, rump, and upper tail-coverts bright golden-

yellow; least wing-coverts green like the back, the greater coverts more olive-green, this same colour overspreading to the secondaries, which are externally barred with obsolete bands of yellowish green; quills brown, barred and toothed on the inner web with whitish, the outer web of the primaries marked at regular intervals with spots of whitish, shaded with greenish on the inner primaries; tail ashy brown, the two middle feathers more decidedly of this colour, obsoletely barred with lighter ashy, and washed with greenish near the base, the other tail-feathers uniform brown, inclining to olive-brown on the under surface, the second and third sometimes exhibiting a yellowish tip; under surface of the body dull greenish, the throat grey like the head; under wing-coverts whitish narrowly barred with dark brown; "bill bluish grey, except the basal edge of upper mandible and basal half of lower, which were greenish yellow; legs greenish grey; claws bluish grey" (*Swinhoe*). Total length 9·7 inches, culmen 1·4, wing 5·7, tail 4·3, tarsus 1·0.

Adult Female. Exactly similar to the adult male, but wanting the crimson forehead, the entire head being grey, slightly shaded with greenish; the black moustachial stripe is also not so distinct. Total length 9·6 inches, culmen 1·35, wing 5·6, tail 4·3, tarsus 1·0.

Young Male. Is like the old female, but has the forehead interspersed with a few crimson and orange feathers. We have not seen any nestlings of this Woodpecker; but Mr. Collett tells us that they are mottled as in the Common Green Woodpecker; from specimens now before us it would appear that the young male does not show any symptoms of the red crown until the following December or January.

Colour of Iris. The colour of the eye in the present species seems to vary considerably, these differences being probably due to age. Thus in a specimen killed in China by Mr. Swinhoe the iris was "white, with a slight wash of pink." Radde says that the iris is orange-yellow; but Von Schrenck gives it as brownish red.

Obs. We perceive little or no difference in specimens from various localities, excepting in the case of a bird from Southern Russia in Lord Lilford's collection. This example is of a pale green above, contrasting strongly with the clear grey of the head and neck, while the forehead is of a different red, inclining rather to bright vermilion; the under surface also is greyish with a slight shade of green, of which latter colour there is not a trace on the head. The specimen in question may be, after all, only a very old bird; but it differs in the manner above described from all the other specimens examined by us. Dr. Taczanowski informs us that Siberian examples are not so green as those from Europe, being more grey in tone.

This species is rather a more eastern bird than the ordinary Green Woodpecker, and does not extend into the western parts of Europe, not being included among the British species. It is very common in Siberia, and is found in considerable numbers in Japan, ranging into Northern China. It cannot be said to be a very common bird in Southern Europe, but occurs in most of the countries bordering the northern side of the Mediterranean, though, as far as is known, it is quite unknown in Northern Africa.

Commencing with its range in Scandinavia, Mr. R. Collett states that it is generally distributed all over the south of Norway to the Trondhjems Fjord, and thence to the Polar circle, though less numerous, and occurs at Saltdal. It breeds at Modum, in Thelemarken, down to Skiens Fjord, and on the eastern part of the province of Christiania. It is not rare on the west coast, but is generally seen in the autumn; on the fell-sides it occasionally passes the conifer region into the birch region, as, for instance, on the Dovre. Nilsson observes that

everywhere in Sweden it is rarer than the Green Woodpecker. In Southern Sweden it is never found, except in severe winters; in Småland, Upland, and Westermanland it occurs now and then in the northern parts; in Wermland, Dalarne, Herjedalen, and Norway it is more numerous; at Gothenburg it is rare, only occurring in the winter, or rarely in the autumn; and at Croust it is also scarce. Professor Sundevall writes as follows:—"With us (in Sweden) it is rare in the whole country inhabited by the Green Woodpecker. It has, however, been found breeding in Calmar Län by Caud. Wetterberg. It does not appear to have been observed in Skåne. On the northern edge of the oak region, however, where the Green Woodpecker becomes scarcer, this species becomes more numerous at Gefle, and from thence to the Lapland frontier (to about 65° N. lat. at Lycksele). In Southern Norway it occurs at Christiania, and in Finland about as far north as in Sweden."

Von Wright says that it occurs here and there in Central Finland, and is not rare in some parts. Dresser, however, did not meet with it in that country. Meyer records it as tolerably common in Livonia and Esthonia. In Denmark, according to Kjærbölling, it occurs rarely during the season of migration, and has been procured at Elsinore and on Mæen. Mr. A. Benzon writes to us that it is said sometimes to occur in Denmark, but he himself knows nothing of it.

Borggreve states that he "found it in the beech-region of the Rhenish Weser and Thüringer mountains, at an altitude of 1000–2600 feet, common and resident. According to Tobias it inhabits the deep forests of Lausitz. Gloger says that is rare on the plains and commoner in the mountains; specimens are in Boeck's collection from Thuringia." In Pomerania it does not breed. Count Wodzicki found it rare in the lower Tatra mountains, and frequenting the woods where bees were abundant, but not in the cold Carpathians, where there are no bees. It is stated by Schlegel to have occurred in North Brabant. De la Fontaine states that, though not so common as the Green Woodpecker, still it inhabits a large portion of Luxembourg, and breeds in the forests of the Ardennes and Eifel, as well as those of the Moselle and Basse-Sûre. In the last locality it is almost as common as the Green Woodpecker, but only occurs in winter near Luxembourg. Godron says it is met with in Lorraine during the autumn and spring migrations; and, according to Krœner, it is sedentary during the winter months in the mountains and plains of Alsace. MM. Jaubert and Barthélemy-Lapommeraye state that it occurs in several parts of France, but that it is very rare, and only a few have been recorded as occurring in Southern France. In Savoy, according to Bailly, it occurs accidentally, and has only been observed near Faucigny during the autumn and winter. It occurs in Southern Spain; for Lord Lilford noticed a pair about the Casa de Campo, near Madrid; and Major Irby tells us that he saw an example in the Museum at Seville. Mr. Howard Saunders writes:—"I did not identify this species in the flesh; but I have seen specimens, and I believe it to be common, taking the place of *G. sharpei* in the higher woods." It is not included in Professor Barboza du Bocage's list of the birds of Portugal. The Grey-headed Green Woodpecker has not been recorded from Sicily; and Count Salvadori says that it is only found along the Alpine borders of Italy, a stray specimen or two being recorded from Verona and Liguria. In Styria, according to Seidensacher, it is about as numerous as *Gecinus viridis*, but not so many are resident in the woods and wooded meadows.

Lord Lilford writes, in his paper on the birds observed by him in the Ionian Islands &c.:—"I saw a fine specimen of this bird near Cettinge, in Montenegro, in August 1857; he settled on a tree close to me; and I watched him for several minutes, much regretting that I had not a gun."

In Greece Lindermayer records it as rare. He obtained a specimen from the island of Eubœa; and Von der Mühle procured it in Rumelia. In the latter place the shepherds say it is found all the year round. Messrs. Elwes and Buckley write:—"We observed one near Babadagh, in Bulgaria; and it has been shot several times near Constantinople by Mr. Robson." Dr. Otto Finsch also remarks the presence of the present species in Bulgaria, where, he says, it is not so common as *Gecinus viridis*.

Dr. Taczanowski tells us that it is found everywhere in Poland, but nowhere numerous. It generally frequents the non-evergreen woods. According to Professor Kessler it is very common near Kiew, and, according to M. Bogdanoff, is found both near Kazan and Astrachan. Pallas says it is not migratory in Russia, where it is found from St. Petersburg to the Volga, even in the southern parts, and is a very common bird throughout the whole of Siberia. Professor von Nordmann says it is common on the south side of the Black Sea. In the forests of Abasia it is numerous, and feeds principally on ants and the caterpillars of *Elater parreyssii*, which elsewhere is a rare insect. It is equally common in the countries bordering the Caspian Sea. According to Goebel it is a resident at Uman, in Southern Russia. Ménétries procured it in the gardens of Kizil-Agaz, and near Lenkoran. Dr. Radde found it in the Amoor country, and writes that there it avoids the large conifer woods, frequenting the birch woods in the mountains, or those on the banks of the river. Like the other Woodpeckers it is a wanderer, and in the winter was rare in the Bureja mountains. He found it in company with Thrushes during the season of migration. Dr. L. von Schrenck observed it on the shores of the Ussuri, near the village of Agdiki, on the 19th of August, and procured a female. He did not observe it elsewhere on the Amoor. Mr. Swinhoe includes it among the birds of China as having occurred near Pekin; and it is also found in Japan, where Mr. H. Whitely says it was "common in the large forests in the vicinity of Hakodadi."

In its habits this species closely resembles the Green Woodpecker, whose place it takes in the high north, where the latter becomes rare. It is scarcely as shy as that bird, but, like it, affects green woods, avoiding the dark conifer growth, or only frequenting such groves as are of mixed conifer and non-evergreen trees. It is not a strict resident, as, like its congeners, it undertakes short or more extended wanderings in the autumn, to which it is probably impelled by the scarcity of suitable food in its breeding-haunts. These wanderings commence late in the autumn; and in March or April the bird returns to its summer haunts, to undertake the cares of incubation. Each bird chooses its regular district, which it works over daily during the autumn and winter season, brooking no intruder on its domain. Its note closely resembles that of the Green Woodpecker, but is not so loud or harsh. Naumann writes that in the spring both the male and female utter a peculiar clear call, like *klü klih klih klyh klyh klüh klüh klüh klüh*, sinking or deepening in tone from syllable to syllable, so that the last notes are much deeper than the commencing ones. Its food consists of all sorts of insects that are found in wood, caterpillars, larvæ, earthworms, and especially ants, of which latter it is especially fond, and often visits the

ground in search of them. It prefers the *Formica rubra* and *F. fusca*, but will also feed on the other species. In the winter season it visits the ant-hills and devours large numbers of these insects. The Rev. H. F. Snell, of Hohenstein, Nassau, states (J. f. O. 1857, p. 186) that "this Woodpecker eats the berries of *Sorbus aucuparia*; and I have caught the bird once in the snow with these as a bait, and found on examination that it had swallowed the berries."

In his paper on the birds observed between Takoo and Pekin, Mr. Swinhoe gives the accompanying notes on the present bird. At first he was inclined to doubt the identity of his Chinese specimens with the European bird; but in his latest list of the 'Birds of China' (P. Z. S. 1871, p. 392) he has referred his specimens to *G. canus*. He writes:—"I first met with this bird about twenty miles beyond Tientsin, where the country abounded in woody plantations. It was often to be found on the ground grubbing about the millet roots; and its earth-stained bill gave tokens of frequent insertion into the soil. If suddenly disturbed, it would utter a screeching laugh, and fly off with a series of long undulations to some distant tree, on which it would fix close to the roots and immediately dodge round to the other side, clambering up all the while with a short jerking motion of the body. It rarely ascended into the upper branches, and seemed content with beating the trunk of the tree only, unless the tree separated above into good thick boughs. If the tree to which it next flew was only a few yards off, the bird's flight consisted of a flutter in a direct line. When arrived, it would half turn on its back, as it were, and throw up its claws to grasp firmly the bark. Its usual note was sharp and monosyllabic, and differed much from that of its pied brethren. It proved to be very common, and known to the Chinese of the place as the 'Tsaou-ta muh-tsze,' or 'Tree-injurer.' It is very tenacious of life, and hard to kill."

Dresser found this Woodpecker breeding in Styria, near Cilli, about equally common as the Green Woodpecker, frequenting the same localities, and breeding in similar places. The nest-holes were usually in an aspen, alder, or some soft-wooded tree, and about ten to twenty feet from the ground; and the entrance appeared, if any thing, rather smaller than that made by the Common Green Woodpecker. Eggs in Dresser's collection, obtained near Cilli in May, measure $1\frac{6}{40}$ by $\frac{34}{40}$ to $1\frac{10}{40}$ by $\frac{34}{40}$ inch, and in colour, texture, and form closely resemble the eggs of *Gecinus viridis*, being pure glossy white, in shape oval, tapering somewhat towards the smaller end. Mr. Collett informs us that if all the eggs but one or two are taken the bird continues to lay. In May 1870, he found a nest in Valders, from which he thus procured sixteen eggs. He states that he has generally found the eggs of this species differ from those of the common Green Woodpecker in being blunter at the larger end. In Norway fresh eggs are generally found between the 10th and the 14th of May. Mr. A. Benzon informs us that he has some Norwegian eggs taken early in June.

The descriptions are taken from three Swedish specimens in Lord Walden's collection, beautifully preserved by the late Mr. Wheelwright. The figures in the Plate represent a pair in our collection, sent to us by our friend Dr. Kutter.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, *b*, ♀. Wermland, December 1871, and January 1872. *c*, ♂. Saxony (*Dr. Kutter*). *d*, ♀. Silesia (*Dr. Kutter*). *e*, ♂. Silesia (*Moeschler*).

E Mus. Lord Walden.

a, *b*, *c*, ♂, ♀, ♂ *juv.* Edsjo, Sweden, December 1864, January 1865 (*H. Wheelwright*).

E Mus. Lord Lilford.

a, *b*, ♂, ♀. Europe (*Verreaux*). *c*, ♂. Switzerland (*Moeschler*). *d*, ♂. South Russia (*Verreaux*).

Subfamily *IYNGINÆ*.

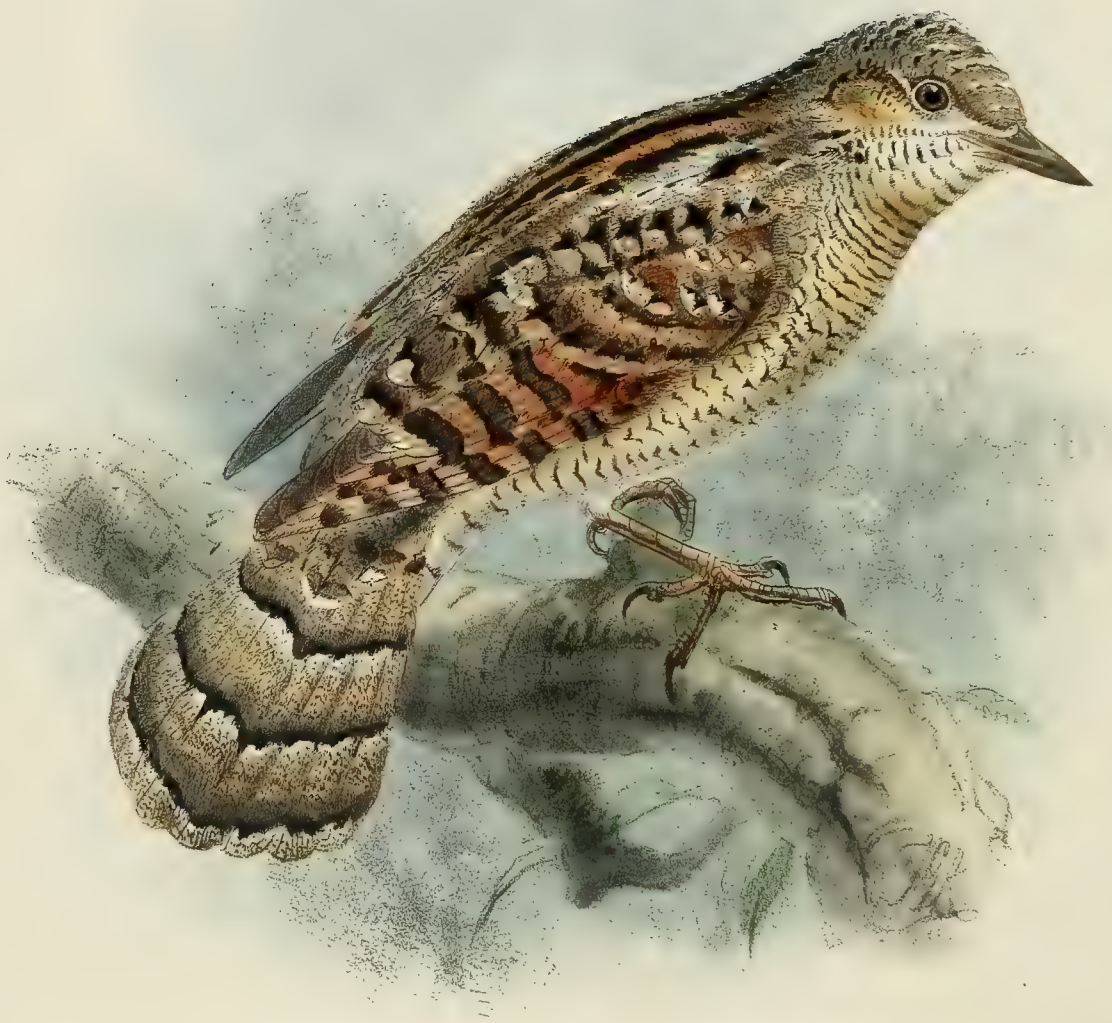
Genus IYNX.

Torquilla apud Brisson, Orn. iv. p. 4 (1760).
Yunx, Linnæus, Syst. Nat. i. p. 172 (1766).
Iynx, Scopoli ex Linnæus, Ann. I. Hist. Nat. p. 45 (1769).
Picus apud Pallas, Zoogr. Rosso-As. i. p. 416 (1811).

The Wrynecks resemble the Woodpeckers in the form of the bill, in having the tongue extensile, and in many points of internal structure, but they differ in lacking the stiff tail, their tail being composed of ten broad rounded feathers of ordinary form. These birds inhabit the Palæarctic, Ethiopian, and Oriental Regions, only one species being found in the Western Palæarctic Region.

The Wrynecks are less active and lively than the Woodpeckers. They climb about on the trees something after the manner of the Woodpeckers, but do not move perpendicularly up, as they lack the stiff tail with which the Woodpeckers support themselves; and they perch sitting across a branch like the true perching birds. They have a peculiar habit of elongating and twisting their necks in a most extraordinary manner; and when disturbed in their nest-hole they utter a loud hissing sound like a snake. They inhabit wooded localities, and feed on insects of various kinds. Their flight is somewhat heavy and laboured; and their note is loud and Hawk-like; but, except during the breeding-season, they are somewhat silent birds. They nest in holes in trees, not excavating the hole for themselves, but selecting one which is suitable, and adapting it to their purpose. They deposit several pure white eggs on the chips at the bottom of the nest-hole, not making any real nest.

Iynx torquilla, the type of the genus, has the bill rather short, slender, straight, tapering to a sharp point without notch; gape-line straight; nostrils linear, the nasal membrane large, anteriorly bare; wings moderately long, straight, the first quill very short, the second and third nearly equal and longest; tail rather long, rounded, composed of ten rather broad rounded feathers; tarsus moderately long, feathered anteriorly a little below the joint, covered with four large and three inferior scutellæ, and scutellate also posteriorly; toes, two directed forwards, parallel, united at the base, two directed backwards, the first small, the fourth almost as long as the third, claws moderate, arched, compressed, laterally grooved, acute; plumage soft; tongue extensile, vermiform, the tip horny, flat, tapering, without bristles.



WRYNECK.

YUNX TORQUILLA

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JYNX TORQUILLA.

(WRYNECK.)

Torquilla, Briss. Orn. iv. p. 4 (1760).
Torquilla striata, Briss. tom. cit. p. 7 (1760).
Yunx torquilla, Linn. Syst. Nat. i. p. 172 (1766).
Jynx torquilla (L.), Scop. Ann. I. Hist. Nat. p. 45. no. 50 (1769).
Le Torcol, Buff. Hist. Nat. Ois. vii. p. 84 (1780).
Picus iynx, Pallas, Zoogr. Rosso-As. i. p. 416 (1811).
Jynx torquilla (L.), C. L. Brehm, Vög. Deutschl. p. 202 (1831).
Jynx arborea, C. L. Brehm, tom. cit. p. 203 (1831).
Jynx punctata, C. L. Brehm, tom. cit. p. 203 (1831).
Yunx japonica, Bp. Consp. Gen. Av. i. p. 112 (1850).
Jynx major, C. L. Brehm, Vogelfang, p. 73 (1855).
Yunx torquilla arborea, A. E. Brehm, Verz. Samml. C. L. Brehm, p. 11 (1866).
Yunx torquilla punctata, A. E. Brehm, ut suprà (1866).
Yunx torquilla major, A. E. Brehm, ut suprà (1866).
Yunx torquilla minor, A. E. Brehm, ut suprà (1866).
Yunx torquilla longirostris, A. E. Brehm, ut suprà (1866).

Wryneck, *Snake-bird*, *Cuckoo's Mate*, English; *le Torcol ordinaire*, French; *Papa-formigas*, Portuguese; *Hormiguero*, *Torcecuello*, Spanish; *Torcicollo*, Italian; *Sultan-issummiem*, *Bu-lebbiet*, Maltese; *der Wendehals*, German; *de Draaihals*, *Mierenjager*, Dutch; *Vendehals*, *Dreihals*, Danish; *Vendehals*, Norwegian; *Göktyta*, Swedish; *Käen-piika*, Finnish; *Vertigolovka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 698; Werner, Atlas, *Zygodactyles*, pl. 11; Kjærb. Orn. Dan. taf. x.; Frisch, Vög. Deutschl. taf. 38; Fritsch, Vög. Eur. taf. 18. fig. 14; Naumann, Vög. Deutschl. taf. 138. figs. 1, 2; Sundevall, Svensk. Fogl. taf. xxiii. fig. 7; Gould, B. of Eur. pl. 233; id. B. of G. B. iii. pl. lxxvi.

Ad. corpore suprà et capite summo griseis vix brunneo tinctis: capite nigro transversim fasciato, plumis nonnullis albido apicatis: dorso et scapularibus nigro vermiculatis et penicillatis, plumis in dorso et nuchâ centrali et scapularibus conspicuè centraliter nigro notatis, scapularibus ochraceo apicatis: remigibus saturatè brunneis, in pogonio externo ferrugineo notatis: tectricibus alarum brunnescenti-griseis nigro vermiculatis, plumis ferè omnibus fasciâ anteapicali et ochrascente albido apicatis: caudâ griseâ nigro-fusco vermiculatâ et penicillatâ et fasciis quinque nigro-fuscis notatâ: corpore subtùs albo, gutture et pectore vix flavicante cervino lavatis: plagâ fuscâ nigro notatâ per oculum ad collum ductâ, et lineâ supraoculari flavicante-cervinâ: gutture et pectore summo nigro-fusco transfasciatis, pectore imo et hypochondriis fasciis ferè sagittiformibus notatis: subalaribus et subcaudalibus flavicanti-albidis fusco transfasciatis: rostro brunneo: pedibus flavicanti-brunneis: iride fuscâ.

Adult Male (Farnborough, Kent, May). Crown and nape light grey, slightly washed with brown, and marked with blackish crossbars, some of the feathers having white tips; back and scapulars grey, finely pencilled and marked with blackish, the feathers on the centres of the nape and back having thick blackish centres, which make a large central patch on the back; scapulars also marked with blackish, and having yellowish terminal patches; quills dark brown, on the outer web marked with distinct rusty brown patches at regular distances along the feathers, inner secondaries marked like the scapulars; wing-coverts rusty brownish grey, delicately vermiculated or pencilled with dark brown, most of the feathers with anteapical semilunar blackish markings, and tipped with yellowish white; tail grey, vermiculated and pencilled with blackish, and with five more or less distinct blackish brown bands; underparts buffy or yellowish white down to the lower breast, abdomen nearly clear white; throat and upper breast marked with blackish slightly bent crossbars, which, towards the abdomen, become arrow-head-shaped; the centre of the abdomen scarcely marked with these blackish marks, they being almost restricted to the sides; through the eye to the neck a dark brown patch, marked with black, passes; and above this from the centre of the upper part of the eye backwards is a buffy white line; under wing-coverts and under tail-coverts dull yellowish white, barred with blackish; bill dull brown; iris dark brown; legs and feet yellowish brown. Total length about 7 inches, culmen 0·58, wing 3·4, tail 2·7, tarsus 0·75.

Young. Resembles the adult bird, but has the underparts much more strongly marked with blackish brown, and the upper parts are not so clear in colour.

This species, the only representative of the genus in Europe, is found during summer throughout Europe as high as the northern portion of Scandinavia, and migrates to Africa during the winter season. Eastward it occurs as far as Japan.

It is common during the summer season in England, but is rare in Scotland, and does not appear to have ever occurred in Ireland. In England it is most numerous in the southern and south-eastern counties, and I have found it numerous in many parts of Surrey, Sussex, and Kent; but on the western side of the island and in the northern counties it becomes rare. It arrives with us in April, remains to breed, and leaves again in August or September. According to Mr. Stevenson it breeds in Norfolk; but in Lincolnshire it is said to be extremely rare, and equally, if not more so in Yorkshire, where I never recollect to have seen or heard it. As above stated, it is rarer on our western than on the eastern coast; and Mr. Cecil Smith informs me that in Somersetshire it is a regular summer visitant, but not a very numerous one. In Guernsey, however, he says, "where it is generally known by the name of Mackerel-bird, it is very numerous during the summer, and every hedge and tree seems full of them." In Scotland it is very rare; and Mr. Robert Gray writes as follows:—"With the exception of a single specimen shot near Hamilton in 1835, and a notice of one near Glasgow in Yarrell's 'British Birds,' I have not been able until recently to trace the occurrence of it in the western counties. In East Lothian and Fifeshire it has several times occurred, and also in Dumfriesshire and Roxburghshire. I got a beautiful specimen at Dunbar in 1847." He further states that it has been recorded from Birse, in Aberdeenshire, and the Braes of Gight, and that it is met with in Sutherlandshire, but as a rule is not found north of the Forth. In Mr. Dunn's copy of Messrs. Baikie and Heddle's 'Fauna of Orkney,' a manuscript note states that one was got at Melsetter in 1841, and that in one instance it had been seen before. Finally, Mr. Gray gives some detailed

notes communicated to him by Mr. Stewart, of the nesting of the Wryneck in the district of Nether Lochaber, Inverness-shire.

It has not been recorded from Iceland or Greenland; but it has been obtained in the Færoes by Mr. H. C. Müller, who received it in 1865 and 1866; and Captain Feilden says that one was found dead at Thorshavn on the 12th September, 1867.

In Scandinavia it is tolerably common; and, according to Mr. Collett, it breeds numerously in the lowlands of Christiania and Hamar Stifts, and north of the fells as far as the Trondhjems fiord, in 64° N. lat., being met with almost exclusively in the interior, and is very rare on the coast, only having been observed near Bergen, Voss, and in the Lærdal. On the fells it is met with in the upper part of the fir-region, as for instance at Hemsedalsfjeld and on the Dovre. Professor Sundevall says that on the Swedish side it is common up to 60° N. lat., and occurs up to 63° in Jemtland and Ångermanland, or perhaps somewhat further north. It arrives in Southern Sweden in April, and leaves again late in August. In Southern Finland it is tolerably common, though nowhere numerous, and is not uncommon in the district of Kuopio, ranging as far north as Kajana. In Russia it occurs as far north as Archangel, where, my collector informs me, it is not very rare during the summer; and Mr. Meves obtained it at Cholmogory. Mr. Leonida Sabanäeff says that in Central Russia it is common, but rarer in the Government of Jaroslaf, and still more so in that of Vologda. In the Ural he met with it numerous in the birch-woods in the Government of Ekaterinbourg, and observed it in the Pavdinskaya dacha.

Throughout the north of Germany it is generally distributed in suitable localities, but does not go up into the mountains. I have seen it in various parts of Prussia and in the Rhine provinces. It is stated by Kjærbölling to arrive in Denmark in April and leave in August, being nowhere numerous, though generally distributed throughout the country. In Belgium, Baron de Selys-Longchamps states, it occurs regularly during the two seasons of migration, and breeds in the wooded districts on the right bank of the Meuse. In Holland it is somewhat rare; but a few pairs breed here and there in suitable localities. In France it is common throughout the country, and breeds in most of the provinces; and Professor Barboza du Bocage includes it in his list of the birds of Portugal as being common. In Spain it is numerous during the seasons of passage, and breeds there, as Mr. Howard Saunders says (Ibis, 1871, p. 65) that he found a nest near Aranjuez. In Italy it is numerous during the summer months, leaving for the south in autumn; and though some few remain in Sicily till the commencement of the winter, the majority continue their journey towards the south. In the spring they pass again, and few, if any, remain in Sicily to breed. Writing on the ornithology of Sardinia, Mr. A. B. Brooke says (Ibis, 1873, p. 235), "I only on one occasion came across this bird during the months of April, May, and the early part of June, although one would imagine numbers must pass through the island on their migration, as they are exceedingly numerous at that season amongst the olive-groves along the Riviera. I think, however, the spring of 1871 must have been an unfavourable one for migration, as I met very few species, and very few individuals of each species, excepting the most common." Mr. C. A. Wright says (Ibis, 1864, p. 50) that it is one of the earliest visitors to Malta in spring and autumn, and occasionally, but very rarely, it is met with in the winter; and Captain Feilden, writing to me from Malta, says, "it is a bird of double passage with us, but, according to my observations, more abundant in the autumnal than

the vernal migration. In September they are frequently strung with the bunches of Nightingales, Garden-, and other Warblers which are sold in the market. At that season they are excessively fat." Lord Lilford says (Ibis, 1860, p. 235) that he twice observed it in Epirus—once in the great marsh of Phanari in March 1857, and again in December in the same year near Kinouria, at the head of the Lake of Butrinto. Lindermayer writes that it winters in Greece, and may frequently be observed in the olive-groves from October to March; and Dr. Krüper writes to me that he has observed it on Olympus during the winter season. In Southern Germany, as in North Germany, it is common during summer; and Dr. A. Fritsch writes that he has found it numerous in Bohemia from April to August. It occurs in the countries bordering the Southern Danube; and Messrs. Elwes and Buckley heard its unmistakable cry several times when in Bulgaria. I have several specimens collected by Mr. Robson near Constantinople; and it occurs numerously in Southern Russia. Von Nordmann writes that it arrives at Odessa about the middle of April, and that it is very common in the Crimea and the Caucasus, extending also to those portions of the steppes which are not entirely destitute of trees and bushes.

Dr. Krüper informs me that it occurs in Asia Minor regularly during the seasons of passage; and Canon Tristram writes (Ibis, 1866, p. 284) that it is a scarce migrant in Palestine, returning from the south about the middle of April.

In North-east Africa it occurs during the seasons of migration, or during the winter. Captain Shelley says (B. of Egypt, p. 161) that it is not uncommon as a spring and autumn visitant in Egypt, but is much less plentiful in Upper Egypt and Nubia than lower down the Nile. Mr. E. C. Taylor shot one at Thebes in March, and another near Damietta in April; and Von Heuglin says that he only observed it in March and April, and again in September and October, at which seasons it was not rare along the Nile and on the coast of Arabia, southward to Abyssinia and Kordofan. Dr. A. E. Brehm writes (J. f. O. 1854, p. 78) that he killed several in the woods of East Sudan.

In North-west Africa it occurs not uncommonly. Major Loche says that it is common in the forests of Algeria, where it breeds. Mr. J. H. Gurney, jun. (Ibis, 1871, p. 294), met with it at Bouffarik and, he believes, also at Tilremt. Mr. Taczanowski states (J. f. O. 1870, p. 40) that it has on several occasions been observed in Algeria at different seasons of the year. Mr. Chambers-Hodgetts says (Ibis, 1867, p. 103) that he shot a pair in Tripoli; and Mr. C. F. Tyrwhitt-Drake shot one at Tangier on the 30th March.

To the eastward it is met with as far as Japan. Mr. Blanford did not meet with it in Persia; but Severtzoff observed it in Turkestan, where, he says, it is met with, both during migration and to some extent during the breeding-season, throughout the country. In India it is, according to Jerdon (B. of India, i. p. 303), "found throughout India, except perhaps on the Malabar coast, where I never saw it, nor heard of a specimen being procured. I have obtained it at Madras, Nellore, Nagpore, Saugor, and Mhow: and it is not rare in Lower Bengal and in the North-western Provinces. It was sent by Hodgson from the sub-Himalayan Provinces, and has been seen in Assam. It is chiefly, perhaps, a cold-weather visitant in the south of India; but it is said to remain all the year further north." Colonel Irby met with it in Kumaon; and Mr. Beavan records it (Ibis, 1865, p. 411) from "Perulia and Kashneghur, Maunbhoom, in March 1864; seen also near Barrackpore in October." It has been met with in Eastern Siberia by the various

Siberian travellers. Von Middendorff obtained a specimen at Udskoj-Ostrog; Mr. Maack shot two on the Schilka on the 28th and 30th May (new style); and Von Schrenck states that he believes it occurs as far north as Kamtchatka. Mr. Taczanowski says (J. f. O. 1873, p. 96) that, according to Dr. Dybowski, it is rare at Darasun in Dauria, where it is a summer visitant, arriving about the middle of April, and frequenting the valleys. Temminck and Schlegel obtained numbers from Japan; Mr. Swinhoe met with it in China, between Takoo and Peking, in August, and says that it occurs down the Chinese coast during winter; and Père David says that it occurs sparingly in North China during passage.

Though in many respects the Wryneck bears no little resemblance to the Woodpeckers, yet in its habits it is much unlike those lively birds, being much quieter and less energetic in its movements, even rather heavy and somewhat stupid: yet it is by no means wanting in agility; for it climbs about amongst the branches of the trees with great facility—though, unlike the Woodpecker, it seldom or never moves along a perpendicular trunk of a tree searching after food, probably owing to its tail being composed of soft feathers, which give it no support when moving up a tree-trunk, as the stiff tail-feathers of the Woodpecker do. When sitting perched on a branch, it sits across it like those birds which always perch; and when it does perch against a tree-trunk it sits with the body turned rather sideways, as if to avoid injuring its tail, and not upright as a Woodpecker does. I have often seen one when suddenly disturbed fly and perch against a trunk, and, after sitting a moment there, fly off without climbing along the tree at all. Quiet and peaceable in its habits, it would be very little noticed were it not for its loud Hawk-like cry, which may be heard at a great distance, and bears some resemblance to the call of the Hobby, but is weaker and somewhat softer. Yet, excepting in the breeding-season (when this clear call may be continually heard), it is rather a silent bird than otherwise. Its note may be compared to the syllables *hveed, hveed, hveed,* uttered many times quickly in succession, sometimes louder and at others softer; and as it usually arrives shortly before the Cuckoo, and this latter bird may be expected almost directly after the call of the Wryneck is heard, this bird has earned from the peasantry the names "Cuckoo's mate" or "Cuckoo's messenger," by which it is almost everywhere known throughout our country. Another very common popular name by which it is known is that of "Snake-bird," which, as well as its name "Wryneck," is derived from its peculiar habit of elongating and twisting its neck in the most extraordinary way, at the same time half-closing its eyes, spreading out the feathers on its head, and writhing its neck like a snake. When taken in the hand it contorts its body, and makes such hideous grimaces, and hisses so loudly, as to frighten any one unacquainted with the bird and its curious habits. It will stretch out its neck to the fullest extent, and turn its head until the beak is now directed forwards and now backwards, as if the head were placed the wrong way.

Usually the Wryneck lives in the closest retirement in some well-wooded place, near where it can obtain its food with ease, and, unless disturbed, is rarely seen flying about. Its flight is somewhat heavy and laboured, and not swift. When it has only a short distance to traverse, it flies in a straight line, with a whirring flight; but when it flies to some distance its flight is a succession of bow-shaped lines. It is seldom seen flying at any great altitude, but usually either near the surface of the ground or from ten to twenty feet high.

It feeds on insects, especially ants in their larval condition, which it seeks on the ground,

hopping about with tolerable ease, the tail being held rather erect, as if to avoid soiling it. Like the Woodpecker's its tongue can be thrust out to a great length, being slender, with a horny point, the cartilaginous appendages of the hyoid bone being extremely long and curved over the head to the base of the upper mandible. Beneath the tongue are two long salivary glands, which open to the mouth by two ducts, through which a copious viscid fluid is poured on to the tongue, so that when it is thrust out the ants or larvæ stick to it and are drawn into the mouth; and so quickly is the tongue thrust out and withdrawn, that when it feeds on ant's eggs it appears as if the eggs were attracted to the mouth by some magnetic power. It not only takes ants from the ground or makes raids on their dwellings, but it picks them off the branches or trunks of the trees, and searches amongst the old mosses on tree-trunks, and at their base, for insects of various descriptions—though, as its beak is frequently found covered with mould, it is probable that it obtains its food more frequently on the ground than on the trees. In the stomachs of those dissected a considerable quantity of grit is always found, which is probably collected with the food; but Naumann says that he has found the stomachs of the nestling birds also to contain some particles of grit.

Soon after its arrival at its breeding-quarters it commences the business of nidification. A hole in an apple-, pear-, or some soft-wooded non-evergreen tree is selected, usually rather low, and seldom in a carefully hidden place. It never makes a hole for itself, but selects one that appears to suit its purpose, and adapts it merely by cleaning it out and working off and ejecting the rotten portions from the inside. It often takes possession of a hole in a tree where there are other hollows, inhabited by other small birds, such as Sparrows, Titmice, Redstarts, &c., with which it lives in the utmost peace and harmony. I have frequently found nests in fruit-trees in gardens only about five or six feet above the ground, and in the most exposed localities. When the hole is selected and cleared out the female deposits her eggs without any real nest being built, the small pieces of wood serving the purpose of a cradle. The eggs, which are usually deposited about the middle of May, or occasionally rather later, according to the season, are oval, rather stout in shape, and somewhat small for the size of the bird, measuring from $\frac{31}{40}$ by $\frac{25}{40}$ to $\frac{34}{40}$ by $\frac{26}{40}$ inch, and are pure white in colour and smooth in texture, the shell being so thin that the yelk of the egg shows through and gives them a pale reddish-orange tinge. In number the eggs vary from seven to eleven or twelve or even more, nine or ten being, so far as my experience goes, about the usual complement; and if the eggs (but one or two) are taken the bird continues to lay. Mr. Stevenson, in a letter just to hand, relates an instance of the extreme fertility of the Wryneck as follows:—"In 1873 a Wryneck which frequented a garden at Sparham, near Norwich, laid forty-two eggs in the season. In 1872 it laid forty-two, in 1871 nineteen, in 1870 eight. In 1874 I believe the number was almost as large as in 1873. My friend Mr. Frank Norgate takes the eggs regularly from the nest by means of a spoon; and the bird continues laying, and does not forsake her nest." The eggs are hatched after being incubated two weeks, the female incubating alone, except when relieved now and again for an hour or so by her mate, doubtless whilst she is in search of food. When the young are hatched they are tended with the greatest solicitude by their parents, who exhibit the greatest affection for their offspring; and whilst the young are small the female will be caught on the nest rather than leave them. Like the Hoopoe, however, they are not cleanly; and ere the young leave the

nest it has become extremely offensive, owing to the castings being left in it and not carried away by the parents. So soon as the young are hatched the male ceases its Hawk-like call; and when they are fledged, and are led about by their parents, they live a quiet unobtrusive existence, and are but little noticed or noticeable.

It is met with breeding in most parts of Northern and Central Europe in suitable localities; but with us in England it is partially distributed. Mr. A. G. More gives (Ibis, 1865, p. 136) its breeding-range as follows:—"Rare in the northern counties, and apparently much less numerous on the western side of England. Does not breed in Cornwall, and is very rare in Devon. I have no authority more recent than Pennant for its breeding in Wales. Mr. Gregson has only once found the nest in Lancashire; and Mr. Smurthwaite has never seen the bird in North-west Yorkshire. Mr. Gough, however, describes the Wryneck as breeding regularly in Westmoreland; and in Loudon's 'Mag. of Nat. Hist.' (vol. iii. p. 172) it is included among the summer visitors to Carlisle." Owing to the insectivorous nature of its food the present species is one of the most useful of our birds, especially in gardens, where it destroys many of the most noxious insects.

In the continental markets it is often exposed for sale, especially in the south of Europe, and by those who are accustomed to eat small birds it is said to be a most delicious morsel, especially the young birds when killed in August or September; but I must confess that I have never myself felt any inclination to test the truth of this assertion.

The specimen figured and described is an old male shot by myself in Kent.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Hampstead, Middlesex, April 28th, 1870 (*Davy*). *b*, *c*, ♀, *d*, ♀, *e*. Hampstead, May 1870 (*Davy*). *f*, ♀. Hampstead, April 14th, 1870 (*R. B. Sharpe*). *g*. Farnborough, Kent, May 1857 (*H. E. D.*). *h*. Spain (*H. Saunders*). *j*, ♂. Rheinpreussen. *i*, ♂. Piedmont, April 6th, 1870 (*Salvadori*). *k*. Sjaelland. *l*. Crimea (*Whitely*). *m*, ♂. Ortakeuy, Turkey, April 4th, 1869 (*Robson*). *n*. Tangier, April 1st, 1874 (*L. H. Irby*). *o*. Egypt, April 10th, 1868 (*E. C. Taylor*). *p*, ♂. N.W. India, September 8th, 1868. *q*, ♂. Lahore, January 2nd, 1868 (*C. Marshall*). *r*, ♂. Punjaub, April 2nd, 1868 (*C. Marshall*). *s*. Tientsin, China (*Whitely*). *t*. Amoy, April 1861 (*R. Swinhoe*). *u*. Amoy, January 3rd, 1867 (*R. Swinhoe*).

E Mus. J. H. Gurney, jun.

a, ♀. Norwich, May 2nd, 1868. *b*, *juv*. Norfolk, 1872. *c*, ♂. Algiers, February 3rd, 1870 (*J. H. G.*).

E Mus. H. B. Tristram.

a. Cambridge, May 1862 (*Fox*). *b*. Pagham, August 1866 (*Harting*). *c*. Kingsbury, August 1866 (*Harting*). *d*. Algiers, April 18th, 1856 (*H. B. T.*). *e*, ♂. Palestine, April 1864 (*H. B. T.*). *f*. Amoy, China, January 1861 (*R. Swinhoe*).

Subclass DESMOGNATHÆ.

Order I. COCCYGES.

Suborder COCCYGES ANISODACTYLI.

Family ALCEDINIDÆ.

Genus ALCEDO.

Ispida apud Brisson, Orn. iv. p. 471 (1760).
Alcedo, Linnæus, Syst. Nat. i. p. 179 (1766).

The Kingfishers are very richly coloured birds, inhabiting, as a rule, the warmer portions of the globe. The genus *Alcedo* contains nine species, which are distributed in the Palæarctic, the northern part of the Ethiopian, the Oriental, and Australian Regions, only one species being found in the Western Palæarctic Region. They are solitary in their habits, frequenting rivers, streams, and sheets of water, feeding on small fishes and aquatic insects, which they usually capture by darting on them from an elevated perch. They are, as a rule, not noisy; and their note is a not unmusical though shrill scream. Their flight is direct and very rapid; and they usually skim near the surface of the water. They nest in holes in banks, which they generally excavate for themselves, and deposit their eggs, which are roundish in shape and pure glossy white, on a lot of fish-bones, which they collect together at the enlarged end of the nest-hole.

Alcedo ispida, the type of the genus, has the bill longer than the head, straight, pentagonal at the base, then four-sided, compressed, and tapering to a point; gape-line straight, commencing beneath the eyes; nostrils elongated, oval, exposed, the nasal membrane short; wings short, broad, concave, rounded, the first quill obsolete, the third and fourth about equal and longest; tail very short, rounded; feet small and feeble; the tibia bare below; tarsus short, indistinctly scutellate; toes slender, the anterior united to nearly half their length; claws arched, compressed, acute.

A closely allied species, *Alcedo bengalensis*, Gmel. (Syst. Nat. i. p. 450, 1788), differing from *Alcedo ispida* by its smaller size, longer bill, and deeper blue coloration, has been met with in North-east Africa, and probably occurs just within the south-eastern limits of the Western Palæarctic Region; but I have not deemed it advisable to include it in this work.



Mintern Bros imp.

COMMON KINGFISHER.

ALCEDO ISPIDA.

ALCEDO ISPIDA.

(COMMON KINGFISHER.)

Ispida, Briss. Orn. iv. p. 471 (1760).
Alcedo ispida, Linn. Syst. Nat. i. p. 179 (1766).
Alcedo subispida, C. L. Brehm, Vög. Deutschl. p. 149 (1831).
Alcedo advena, C. L. Brehm, op. cit. p. 150 (1831).
Alcedo hispida, Less. Traité d'Orn. p. 243 (1831).
Alcedo pallasii, Reich. Handb. Alced. p. 3 (1851).
Alcedo brachyrhynchos, C. L. Brehm, Vogelfang, p. 51 (1855).
Alcedo pallida, C. L. Brehm, ut suprà (1855).
Alcedo bella, C. L. Brehm, ut suprà (1855).
Alcedo sindiana, Hume, Stray Feathers, i. p. 169 (1873).

Martin-pêcheur, French; *Martin pescador*, Spanish; *Uccel Santa Maria*, Italian; *Ghasfur ta San Martin*, Maltese; *Kandil el behar*, Moorish; *gemeiner Eisvogel*, German; *de Ijsvogel*, Dutch; *Jisfugl*, Danish; *Kungsfiskare*, Swedish; *Zemorodok*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 77; Werner, Atlas, *Alcyons*, pl. 2; Kjærb. Orn. Dan. taf. xiii.; Frisch, Vög. Deutschl. taf. 223; Fritsch, Vög. Eur. taf. 14. fig. 1; Naumann, Vög. Deutschl. taf. 144; Sundevall, Svensk. Fogl. pl. 70. fig. 2; Gould, B. of Eur. pl. 61; id. B. of G. Brit. ii. pl. 10; Schlegel, Vog. Nederl. pl. 134; Reich. Handb. *Alced.* t. cccxcii. figs. 3043–44, t. cccxciii. figs. 3045–46 (1851); Sharpe, Mon. Alced. pl. i.

♂ *ad.* suprà viridi-cyaneus, dorso imo, uropygio et supracaudalibus lætè cyaneis: capite cristato grisescenti-nigro, cyaneo fasciato: remigibus nigricantibus, in pogonio interno ad basin pallidè rufescentibus et in pogonio externo viridi-cyaneo lavatis: caudâ saturatè cyaneâ: gulâ et vittâ in colli lateribus albis vix fulvido lavatis, loris et regione paroticâ rufis: corpore reliquo subtùs lætè castaneo: rostro nigro: pedibus rubris: iride fuscâ.

♀ *ad.* mari similis sed vix sordidior, mandibulâ ad basin sordidè aurantiacâ.

Adult Male (Cookham, Berkshire). Above blue, the base of the feathers being greyish black; head crested, barred with bright blue; upper part of the back and scapulars green; rest of the back, rump, and upper tail-coverts beautifully rich cobalt; wing-coverts green, the greater coverts inclining to blue, distinctly spotted at the tip of each feather with bright bars of cobalt; quills blackish, pale rufous at the base of the inner web, the outer web broadly washed with greenish blue; tail deep blue inclining to indigo above, black beneath; lores and ear-coverts light chestnut; cheeks blue; throat and a patch of feathers along the sides of the neck white, slightly tinged with fulvous; rest of the under surface of the body rich chestnut with a patch of blue feathers on the sides of the upper part of the breast; bill black; iris dark brown; feet red. Total length 7·5 inches, of bill from front 1·7, from gape 2·0, wing 2·95, tail 1·5, tarsus 0·3, middle toe 0·55, hind toe 0·25.

Adult Female (Cookham). Differs from the male in having the basal half of the under mandible dull orange; and the upper parts are a trifle less brightly coloured and more green in tint of colour.

Young. Upper parts much darker and duller than in the adult; underparts dull brownish chestnut, the feathers on the breast edged with greyish green; bill short, and therefore in appearance stouter than in the adult bird; legs blackish grey with a reddish tinge, redder on the inner side.

Obs. The plumage differs but little in winter from that worn in summer; but as the moult takes place late in the year, the winter dress is richer and brighter in colour than the summer one.

The present species of Kingfisher inhabits the entire temperate portion of the Palæarctic Region, being met with throughout Europe as far north as Scandinavia; and it also inhabits Northern Africa. Eastward it extends as far as Sindh, being replaced in Eastern Asia by a very closely allied but specifically distinct form, *Alcedo bengalensis*, Gm.

In Great Britain it is generally, though sparingly, distributed throughout the country, and ranges tolerably far north in Scotland. It is with us a resident to some extent, and also a partial migrant; for it generally quits its breeding-haunts during the winter season, though many remain with us throughout the year. Mr. Cecil Smith informs me that he observed it in Guernsey, where it is by no means uncommon amongst the wild rocks on the northern shore, but he never met with it in any of the other Channel Islands. It is, he adds, still as common in Somerset as its numerous persecutors will allow it to be; and a few breed on the banks of most of the streams and rivers. Mr. Cordeaux says that it is rare and local in the Humber district; and in Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 205), it "occurs in almost every stream south of Sutherlandshire, and in some localities is never absent. It has been found once or twice in Islay, and likewise in Skye." He further adds that he found it breeding in several parts of Lanarkshire and Ayrshire; and Mr. Harvie-Brown says it is common along the banks of the Carron, in Sterlingshire, and is also well known on the banks of the Endrick and other streams flowing into Loch Lomond.

In Ireland, Thompson writes (Nat. Hist. Irel. i. p. 369), "it is nowhere numerous; but as many individuals seem to be distributed over districts favourable for their abode in Ireland as in any other country. There is decidedly a partial migration or movement of these birds. They came regularly every year about the same time in the month of August to ponds at our own residence in the country, contiguous to the mountains, and elevated 500 feet above the sea. They remained generally for about six weeks, and once only were seen in winter. Their first appearance in the year 1831 was on the 4th August, in 1833 on the 14th, in 1834 on the 14th, and in 1835 on the 17th of that month."

Some interesting notes were furnished to Mr. Sharpe and myself respecting the occurrence of the present species in Ireland by Mr. Harry Blake-Knox, which I transcribe as follows:—"Were I to write a history of this species I could only repeat the remarks of other naturalists; and with regard to its migration in the county Dublin I can say but little, save that it is not a common bird with us except in autumn. I have no doubt it would be a permanent resident in the county and generally throughout Ireland if unmolested, because it breeds in suitable localities and tarries with us frequently through the winter. It looks especially beautiful when seen in

the latter season of the year flying across the frozen rivers or crossing the snow. During the autumn there is a great influx of Kingfishers into this and the neighbouring counties; and it is solely at this season one meets with them upon the coast, and then only where it is rocky and consequently full of pools, in which rock-fish and crustaceans (particularly prawns) are left by the receding tide; and these afford a plentiful supply of food for the Kingfishers. I am confident these birds, so found, are on their way south; but that they linger for months in such haunts I am positive, from the fact of always meeting a pair or more in the same locality. I have seen them on our islands, miles out to sea, where they have taken up a temporary abode; and I have elsewhere mentioned how strangely out of place they seem in such localities, and how they roost on the gunwales of boats in little companies, sitting side by side like Love-birds. They utter a shrill grating whistle more frequently over the salt water than over the fresh. The returning spring migration, like that of the Skua, is not performed along the east coast of Ireland, and perhaps, like the Skua, takes place on the western; but of this I have no proof."

The Kingfisher does not appear to have ever straggled as far north as Iceland, nor has it been met with in the Færoes; but it occurs in Scandinavia, and Mr. Collett informs me it is now and again seen in the southern part of Norway. Near Christiania it was several times seen between the years 1820 and 1840, but has not been met with of later years. The Rev. Mr. Schübeler observed it near Fredriksstad in February 1835; and it has been recorded from Nedenæs, in Christiansand Stift, and Arendal. Professor Sundevall says that it has several times been observed in Skåne, in Southern Sweden; and Nilsson states that it has occurred as far north as Hornings-holm, in Södermanland. Further, Dr. Sundström writes to me that it has once been met with near Stockholm, and once near Gothenburg, and that it has, on reliable authority, been stated to have bred in Småland. It does not appear to have ever been met with in Finland; but in Russia, Mr. Sabanäeff informs me, it has been met with as far north as the Governments of Tula, Orloff, and Voronege, but is rare in Central Russia. He found it by no means rare in the South-eastern Ural, in the Perm Government, along the tributaries of the Ufa, and in the Poleffska Dacha: on the eastern slope it is occasionally met with in the Kaslinsk Ural; but he does not think that it breeds there. It is met with in the Baltic Provinces; and Borggreve says that it is tolerably common throughout Northern Germany, where it is both a resident and a partial migrant. Kjærbölling says that it is found singly or in pairs in Denmark and in the Danish provinces, being most frequently seen in the spring and autumn; and he gives several instances of its occurrence, from the dates of which it would appear that it does not breed there. Mr. H. M. Labouchere informs me that it is found in Holland on all watercourses and large ponds, especially where there are woods in the neighbourhood. In summer they fly singly; but after severe frosts a dozen or more of these birds are often seen to congregate on the ice. It is to this fact that they owe their Dutch and German name of Ice-bird. In Belgium and France it is common, and breeds in most parts of the country, but in some parts where it has been much persecuted it is rapidly decreasing in numbers; and in Portugal it is also stated by Professor Barboza du Bocage to be common. Colonel Irby states (Orn. Str. Gibr. p. 68) that it "is common in winter and spring near Gibraltar, and is frequently seen among the rocks on the coast, and often at the 'inundation' at the North Front. I have no record of its occurrence during the breeding-season—that is, not later than *the end* of April. The majority arrive in

October, leaving in March." In Switzerland and Savoy it is resident, but is, Bailly says, more numerous in the summer, a partial migration taking place in winter. It is also common and breeds in Italy, being, according to Savi, a resident in Tuscany. Mr. A. B. Brooke remarks that though he visited many likely localities he never saw a Kingfisher in Sardinia, where, according to Salvadori, it is not uncommon; but Mr. C. A. Wright (Ibis, 1864, p. 73) says that in Malta the common Kingfisher, which is called by the Maltese *Ghasfur ta San Martin*, is "an annual visitor; generally seen about the sea-shore in pairs. Arrives in August and September, and occasionally observed in the winter months. One was killed on the 14th March, 1862. Said to breed here sometimes."

Lord Lilford says that it is common at Epirus; and Dr. Krüper states that it is frequently to be met with in Greece during the winter, but he is doubtful as to whether it ever remains there to breed. It is tolerably common in Southern Germany and in the countries bordering the Upper Danube, but is said to be rarer on the Lower Danube and in Turkey. Professor von Nordmann writes (in Démidoff, Voy. Russ. Mérid. iii. p. 207) that it "lives in pairs on the shady banks of all the rivers which empty themselves into the Black Sea; towards the middle of April it arrives on the marshes which are found in the neighbourhood of Odessa. It is pretty generally distributed throughout the province of Ghouriel;" but Mr. Goebel writes (J. f. O. 1871, p. 135) that he only once met with it (in July) in the Uman district in Southern Russia. Mr. Danford has lent me specimens from Asia Minor, shot in the winter season; and Dr. Krüper says that he believes it sometimes remains to breed near Smyrna. Canon Tristram, who met with it in Palestine, gives (Ibis, 1866, p. 84) the following particulars respecting its distribution:—"*Alcedo ispida* is scattered everywhere throughout the country wherever there are streams, and also along the Mediterranean coasts; but it is nowhere very abundant, though evidently unaffected by climate, fishing indifferently in the little torrents of the Lebanon, among the ruined columns of Tyre, or in the seething swamps of the Jordan valley. All three species [*A. ispida*, *Ceryle rudis*, and *Halcyon smyrnensis*] resort to the shores of the Dead Sea, attracted by the shoals of fishes which are brought down by the freshwater streams and soon stupified by the brine of the lake. One morning on the western side, Mr. Shepherd shot all three species within a few minutes of each other; generally, however, we met with *A. ispida* in more secluded localities, and on the banks of smaller streams than the others, and even in ditches. In the Lebanon it is the only species."

In North-east Africa the present species meets its eastern representative, *A. bengalensis*; but this latter appears to be only an accidental and rare visitor. Captain Shelley says (B. of Egypt, p. 165) that it is "very abundant in the Nile delta, and occasionally met with throughout Egypt. I have myself seen it above Cairo upon three occasions—at Sioot, Koos, and Thebes;" and Von Heuglin, who says that he found the present species somewhat rare (in the winter) from the delta into Central Egypt, adds that all those he obtained were immature birds. Loche says that it is common in Algeria; Mr. C. F. Tyrwhitt-Drake records it from Tangier and Eastern Morocco as "common and breeding;" but Colonel Irby says (*l. c.*) that, according to Favier, "it is only found from August to March, and is not common near Tangier, but more abundant near Rabat."

It has also been met with in the Canaries and at Madeira. Dr. C. Bolle says (J. f. O. 1854, p. 461) that it is a rare resident in the "barrancos" of the warmer portions of the coasts of the

Canaries; and Mr. Godman writes (Ibis, 1872, p. 169) as follows:—"I am not sure that this bird has any real right to be included amongst the resident species of the Canaries, though it is frequently met with about the coasts of the eastern island. I do not believe it breeds there. I saw it once or twice near the Port of Orotava in Teneriffe, in the middle of April. It is given by Vernon Harcourt in his list of occasional visitors in Madeira."

The present species ranges much further to the east in Asia than was supposed when Mr. Sharpe wrote his "Monograph;" for he did not believe that it passed east of Egypt; Mr. A. O. Hume, however, has clearly shown (Stray Feathers, i. p. 169) that it is found in Sindh. He gives a very careful table of measurements, clearly demonstrating that the examples obtained by him were really nothing but *A. ispida*; and at the same time he adds (rather unnecessarily, it appears to me) another synonym to the list of those borne by our common Kingfisher, and says, "some ornithologists will doubtless be disposed to consider the brevity of bill coupled with the greater length and bulk of body as entitling the Sindh race to specific separation; and those who do so may call it *A. sindiana*; for my part I look upon it merely as an outlying race of *ispida*."

Mr. C. W. Wyatt obtained *A. ispida* on the marshes near Tor in Arabia; and Messrs. Blanford and St. John brought several specimens from Persia and Balúchistán. The latter gentleman says that it is the commonest Kingfisher in Persia, and is found everywhere, in suitable localities, from the Caspian Sea to the Persian Gulf; and Mr. A. O. Hume writes (*l. c.*) as follows:—"I found this species everywhere in Sindh, from Kussmore, the extreme north-east point, to the Hubb river at its south-western extremity. It is impossible to exaggerate the numbers in which this species is found along some of the small rush-fringed canals of Upper Sindh. In the immediate neighbourhood of Jacobabad, along perhaps three or four miles of such a canal, I shot in an hour seven or eight, and saw at least twenty of these birds. In the large rivers and large inland pieces of water they are but rarely met with; but in all the narrow watercourses, where the dense reeds on either bank bend curving over the stream, nearly meeting in the centre, these little Kingfishers may be seen at every hundred yards or so swaying to and fro on an overhanging stem, or gliding up and down the stream with a noiseless rapidity that baffles description." Dr. Severtzoff informs me that it is never found in Turkestan, where *A. bengalensis* is common. It is somewhat scarce, but not very rare, and breeds, on the Ural river down to Guriew, and the streams falling into it; also on the river Bitjug, which falls into the Don, in the Government of Voronege.

One of our most richly coloured and conspicuously plumaged birds, the Kingfisher is a well-known species throughout the country wherever there are streams or ponds; for though it prefers a quiet clear stream well shaded by trees and bushes, yet it is not unfrequently met with on ponds and small lakes, if the shores are well covered with bushes and not flat and the water is shallow. It sits during the day in shady places on the edge of water, where it is not easily seen, but where it has a chance of an open view from at least one side, and has favourite places where one may almost always be met with, and where it perches on the same branch, stone, or stump, the latter being, I have observed, a favourite perch when there is one overhanging the water. Here the bird sits silently and quietly watching for its finny prey, unless disturbed, when it shoots out and darts quickly along the stream, uttering its shrill cry, and looking lovely as the

bright blue of its plumage glitters in the sunshine. It is a solitary and unsociable bird, looking with suspicion on any other bird that approaches its favourite haunt; and if the intruder is not too strong it will drive it away, uttering loud cries. Where a pair have taken up their abode they will rarely brook the presence of others of their own species, but attack any intruder with the greatest fury, and usually succeed in driving him away. When fighting or pursuing each other they appear to forget all caution, and sometimes will dash close to any one who may be strolling alongside the stream; but when they are aware of the proximity of danger they forget their quarrel in a very laudable desire to seek safety in a most precipitate flight. Naumann remarks the extreme pugnacity and unsociable habits of the present species, and says he has seen them pursuing each other, dashing along close to the surface of the water like an arrow, following every turn of the stream, uttering loud cries. So fierce is the animosity displayed by these birds, that when excited in combat they fly heedless of obstacles, and thus occasionally meet their death in their headlong career; not long ago, indeed, an instance was recorded in 'The Field,' by Mr. E. Ward, of two Kingfishers which flew with such violence against a window, that both pursuer and pursued met their death on the spot. Mr. Alfred Denison possesses these identical specimens, which were stuffed to commemorate the occurrence.

The call-note or cry of the Kingfisher is a clear, loud, and shrill note, resembling the syllable *tiit*, and not unlike the call of the common Sandpiper, though higher-pitched and more shrill. It utters this cry nearly always when on the wing, and several times in succession, so that it sounds like the syllables *tit*, *tit*, *tit*. When undisturbed the bird is very silent, only now and then uttering its shrill cry when flying from one perch to the other, during which it seldom traverses a greater distance than three or four hundred paces, the halting-places being usually much closer together than that. It feeds chiefly on small fish of various kinds, sometimes on water-insects, and, in case of need, Naumann adds, also on leeches. Fishes from about one inch long to nearly three inches in length are usually captured; and it is by no means particular as to the species, though it prefers a slender to a stout and short fish. Minnows, small gudgeon, trout, dace, and chub are the species it appears most frequently to capture; but when it frequents the sea-shore it captures and devours shrimps; and Mr. Gatcombe informs me that one brought to him at Plymouth had the stomach crammed with small crabs. It is said to be destructive to salmon fry, and whether guilty or not it is relentlessly pursued and destroyed by the preservers of salmon. The greatest enemy the present species has, however, is the plume-dealer. Owing to the now prevalent fashion of wearing gaudily coloured birds' feathers in their hats, ladies of the present day have much to answer for as regards the great diminution in the numbers of the Kingfisher; for so eagerly have they been sought after to be used for plumes, that in many parts of Great Britain they are all but exterminated.

The Kingfisher captures its prey by watching for it, seated on a stone or branch overhanging the water, and darting on the passing fish, dropping into the water like a stone, and rarely missing its mark. Sometimes it may also be seen hovering over the surface of the water, keeping itself in the air by a quick fluttering of the wings, something like a Kestrel hovering over a field; and so soon as it catches sight of a fish it drops on it at once. In places where a suitable perch over the water is not readily found, it may often be observed hovering thus; and in the bright sunshine its richly coloured plumage makes it very conspicuous. Sometimes it

will plunge several times in succession into the water without attempting to capture any thing, doubtless to wash itself. When it has captured a fish it takes it to its perch, kills it with a few smart raps, and immediately swallows it head first.

It breeds rather early, having eggs as early as April, and, as a rule, rearing but one brood in the season. The nest is excavated in a bank, either overhanging the water or, not unfrequently, at a considerable distance from any water. It usually selects a clay soil in preference to gravel, doubtless because the latter is not so easy to excavate; for it almost always tunnels its own nest-hole, seldom taking possession of one already made, though when it has once successfully reared a brood in a place it returns again most pertinaciously, and is not easily driven away. The hole is round externally, resembling that of a rat, and ascends somewhat, doubtless to carry off the moisture. It is usually bored in the face of a perpendicular bank, and is about two feet deep; at the end it is enlarged into an oval chamber in which the eggs are deposited on a collection of fish-bones and castings. Mr. G. Dawson Rowley describes a nest found by him near Brighton, in April 1866, as follows:—"By measurement, the entrance was 12 inches from the surface of the ground, and about 5 feet from the water. The length of the ascending gallery was $8\frac{1}{2}$ inches, and the oval chamber 6 inches in diameter more. The top of the chamber was 9 inches from the surface of the ground. It contained the usual nest of fish-bones, which was $1\frac{1}{2}$ inch deep;" and Mr. Gould describes a nest taken by him as formed of fish-bones, on which the eggs were placed. "This mass of bones," he writes, "weighing 700 grains, had been cast up and deposited by the bird and its mate in the short space of twenty-one days. Ornithologists are divided in opinion as to whether the fish-bones are to be considered in the light of a nest. Some are disposed to believe them to be the castings and fæces of the young brood of the year, and that, the same hole being frequented for a succession of years, a great mass is at length formed; while others suppose that they are deposited by the parents as a platform for the eggs, constituting in fact a nest: and I think, from what I have adduced, we may fairly conclude this is the case; in fact, nothing could be better adapted to defend the eggs from the damp earth."

Some interesting notes on the nidification of the Kingfisher were published by Dr. Kütter (J. f. O. 1866, p. 38), which I translated for my late colleague's (Mr. R. B. Sharpe) 'Monograph of the Kingfishers,' from which work I again transcribe them as follows:—"The usual breeding-time I have found to be April, May, and June. Generally they have but one brood in the year; but if any thing happens to the first the female not rarely has another; and it is such a brood that one finds in July or August. This I determined by marking the bills of three females with a file, and afterwards catching them on the nest. The position of the nest-hole I have found in a straight bank, which is not necessarily washed by the water. I have as an exception found it in a bank about twenty paces from water, and divided from it by a well-frequented path. The circular hole, about 2 or 3 inches in diameter, in low banks is just under the edge, and in high banks about the middle or below that. It narrows slightly, and rises gradually, or runs quite horizontal, and is tunneled $1\frac{1}{2}$ foot to as much as $3\frac{1}{2}$ feet into the bank. I have sometimes known them to turn off to one side, but in such cases have invariably found roots or stones to be the obstacle to its continuation in a direct line. The well-known grooved marks on each side of the base are more or less distinctly worked out in the neighbourhood of the outlet, or in much-used holes are quite effaced. The oven-like or lentile-shaped chamber at the end is

evenly domed, generally 6 inches wide and 4 inches high; and the bird only begins to furnish it with discarded bones and scales of fish (which it has eaten) after commencing to lay the eggs. Newly finished chambers without eggs never have a trace of this peculiar nesting-material, which during the time of laying the eggs and sitting gradually increases in size, and accumulates so that at last it forms a foundation evenly arranged, several lines high. When incubation has commenced, one never finds an egg on the bare earth; and indeed the eggs require, from their number and size, as do also the naked young, in addition to the warmth of the mother, some protection from the bad conductor of warmth in the shape of the chilly earth; so that it is to me perfectly incomprehensible how people can speak of a *chance* collection of these remains in the nesting-chamber. Moreover these remains have the same physical properties and serve exactly the same end as a foundation of dry grass, straw, &c., which birds habitually frequenting the water can less easily make use of. I should add that the digging of the hole, which seems so great an undertaking for so small a bird, is completed in a comparatively short time; and I can show that the space of scarcely a week suffices in some instances. In the eager picking and digging, often in hard sand rubble, the beak is much used: and the bird appears from choice to work *with the upper mandible only*; for I have often found it shortened one or two lines, and in one instance one third of the length was wanting, having, as it seems, been broken off. I never found them in colonies; and when several holes are close together, only one is inhabited. The shortest distance between inhabited holes was about fifty paces. I have, without exception, found seven to constitute the full complement of eggs, even in a second brood. I have been unable to prove or disprove that fifteen or sixteen days, as stated, is the period of incubation."

Respecting the use of the upper mandible in digging, Dr. Kütter adds the following foot-note:—"This is easily to be understood on anatomical grounds, inasmuch as the upper mandible is fixed fast to the skull, whereas the weaker under mandible, being attached to the skull only by joints and sinews, can less easily withstand the hard work of digging. It is probable that on these grounds the Woodpeckers work, in excavating their holes, with the upper mandible and not with closed bill; but I cannot state this from my own observation."

When the nest-hole has been tenanted some time, it may easily be ascertained if the hole is occupied by applying the nose to the entrance; for the musty fish-like odour is easily discernible: but when the young are hatched, their presence in the hole may readily be detected by the cries they emit; for they are very noisy. When able to fly, they sit in secluded spots in the neighbourhood of the nest, and are very clamorous for food. The old birds evince great solicitude for their offspring, and, when an intruder is seen in the neighbourhood of their young, may be observed flying restlessly from point to point with the food in the bill intended for the little Kingfishers, who, unsuspecting danger, answer the anxious cry of the parent bird from the depths of the shady retreat where they are awaiting its return. I may name that, when only just able to fly, the note of the young exactly resembles the cry of the adult bird, but is of course not so powerful.

The eggs of the present species vary in number from five to seven, and are roundish oval in shape, some being rounder than others, and in colour, when blown, pure white; but when the yelk is still in the egg it imparts a warm pinkish tinge to it. The surface of the shell is very

smooth and glossy, and makes it look as if polished. Eggs in my collection vary in size from $\frac{33}{40}$ by $\frac{29}{40}$ to $\frac{36}{40}$ by $\frac{30}{40}$ inch.

According to the late M. Jules Verreaux the superstition respecting the present bird, to the effect that when mummified and hung up it will always point in the opposite direction to whence the wind comes, still exists amongst the peasantry of France; and he cites this popular superstition as the chief cause why the bird is so much destroyed in that country. Although now almost forgotten in England, it evidently existed in this country in Shakespeare's time; and two instances are adduced by Mr. J. E. Harting in his interesting article on the Birds of Shakespeare (Zool. 1867, p. 533):—"It was also supposed that the dead bird, carefully balanced and suspended by a single thread, would always turn its back towards that point of the compass from which the wind blew. Kent, in 'King Lear,' speaks of rogues who 'turn their *halcyon* beaks with every gale and vary of their masters;' and after Shakespeare, Marlowe, in his 'Jew of Malta,' says, 'but how now stands the wind? Into what corner peers my *halcyon's* bill?'"

The specimen figured is an adult male from Cookham, on the Thames, and is the bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, ♂. Near London (*Davy*). *c*, ♂, *d*, ♀. Cookham, Berks, September 1868. *e*, ♀. Kingsbury, December 1862 (*J. E. Harting*). *f*, ♀. Hendon, Middlesex, October 1869 (*J. E. Harting*). *g*, ♂. Pagham, Sussex, July 11th, 1870 (*R. B. Sharpe*). *h*, ♂. Near Constantinople, October 13th, 1869 (*Robson*).

E Mus. C. G. Danford.

a, ♂, *b*, ♀. Adalia, Asia Minor, December 1874 (*C. G. D.*).

E Mus. Howard Saunders.

a, ♂. Kingsbury Reservoir, September 29th, 1866 (*C. B. Wharton*). *b*, ♂. Rio Genil, Granada, September 1872. *c*, ♂. Malaga, October 15th. *d*, ♀. Malaga, November 4th. *e*, *f*, ♂. Malaga, November 11th and 27th. *g*, ♂. Malaga, December 30th, 1872.

Genus CERYLE.

Ispida apud Brisson, Orn. iv. p. 521 (1760).
Alcedo apud Linnæus, Syst. Nat. i. p. 181 (1766).
Ceryle, Boie, Isis, 1828, p. 316.

This genus contains, according to Mr. Sharpe, thirteen species, which inhabit the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, only one species, *Ceryle rudis*, being found in the Western Palæarctic Region, its range being given in the following article.

In general habits the species belonging to the genus *Ceryle* do not differ greatly from *Alcedo*, but they are much more sociable than those birds. They frequent rivers, streams, &c., and, like *Alcedo ispida*, capture their prey by pouncing on it from some elevated perch. They feed almost entirely on small fish; and I am not aware if they devour aquatic insects. Their flight is swift and straight, steadied by rapid flutterings of the wings; and their note is a shrill whistle. They nest in deep horizontal holes excavated in steep banks, and deposit several roundish, pure white, glossy eggs, which are placed on a small heap of dry clean grass at the end of the nest-hole.

Ceryle rudis, the type of the genus, has the bill longer than the head, straight, pentagonal at the base, then tapering to a point; gape-line straight, commencing below the eye; nostrils elongated, oval, exposed, the nasal membrane short; wings moderate or rather long, and broad, the first quill very short, the second shorter than the fifth, the third and fourth longest; tail rather long, slightly rounded, very much longer than in *Alcedo*; feet short, feeble, the three anterior toes united at the base; tibia bare below, the tarsus scutellate; claws arched, compressed, acute; sexes dissimilar.

An American species belonging to the present genus, *Ceryle alcyon*, has been twice killed in Ireland (in 1845), one specimen having been obtained at Annsbrook and the other at Luggela, Wicklow; but I have not thought it advisable to include it. It is a large bird, about equal in size to *Ceryle rudis*; but the male is slaty blue above and white below, with a broad band of slaty blue on the upper part of the breast, the female differing in having the flanks and pectoral band below rufous.



PIED KINGFISHER.
CERYLE RUDIS.

CERYLE RUDIS.

(PIED KINGFISHER.)

Black-and-White Kingfisher, Edwards, Nat. Hist. Birds, p. 9 (1751).
Ispida ex albo et nigro varia, Briss. Orn. iv. p. 521 (1760).
Alcedo rudis, Linn. Syst. Nat. i. p. 181 (1766).
Le Martin-pêcheur pie, Buff. Hist. Nat. Ois. vii. p. 185 (1780).
Ceryle rudis (L.), Boie, Isis, 1828, p. 316.
Ispida bicincta, Swains. B. of W. Afr. ii. p. 95 (1837).
Ispida bitorquata, Swains. Classif. of B. ii. p. 336 (1837).
Ispida rudis (L.), Jerdon, Madras Journ. 1840, p. 232.
Ceryle varia, Strickl. Ann. Nat. Hist. vi. p. 418 (1840).
Ceryle bicincta (Sw.), Reichenb. Handb. d. spec. Orn. p. 20 (1851).
Ceryle leucomelanura, Reichenb. tom. cit. p. 21 (1851).
Ceryle leucomelas, C. L. Brehm, Vogelfang, p. 51 (1855).
Alcedo bicincta (Sw.), Chapm. Trav. in S. Afr. ii. App. p. 409 (1868).

Figuræ notabiles.

Edwards, Nat. Hist. Birds, pl. 9; D'Aubenton, Pl. Enl. 62 & 716; Werner, Atlas, *Alcions.* Suppl. pl. 1; Fritsch, Vög. Eur. taf. 15. fig. 11; Reichenbach, op. cit. pl. 408. figs. 3097, 3098, & pl. 409. fig. 3488; Sharpe, Monogr. Alced. pl. 19.

♂ *ad.* supra niger albo variegato, pileo cristato, striâ superciliari fere ad nucham ductâ albâ: subtùs albus, pectore nigro bicincto: remigibus nigris, ad basin albis, secundariis in pogonio interno fere omnino albis et in pogonio externo versus apicem nigris, albo apicatis: rectricibus albis fasciâ latâ anteapicali nigrâ: rostro nigricanti-corneo: pedibus nigricantibus: iride fuscâ.

♀ *ad.* mari similis sed vix minor, pectore unifasciato.

Juv. corpore suprà saturatiùs nigro, fasciâ pectorali canâ nigricante marginatâ, gulæ plumis indistinctè nigro-fumoso apicatis.

Adult Male (Gennesaret, 23rd May). Upper parts black, marked and varied with white; feathers on the crown elongated, forming a crest; a broad white line passes over the eye to the hind neck; quills black on the terminal and white on the basal portion, the white extending further on the inner than the outer web, the secondaries having the inner web nearly entirely white and the outer one black on the terminal half, and slightly tipped with white; tail white, spotted with black on the basal two thirds, black on the remaining third, and finally tipped with white; underparts white, the breast crossed by one broad and one narrow band; bill and legs black; iris brown. Total length about 11·5 inches, culmen 2·3, gape 2·8, wing 5·55, tail 3·6, tarsus 0·45.

Adult Female (Syria). Resembles the male, but has the breast crossed by one, not two bands.

Young (Egypt). Resembles the female, but has the upper parts much blacker, the crown being scarcely marked with white, and the feathers on the throat have faint blackish tips; band on the breast greyish, margined with black.

This elegantly coloured Kingfisher inhabits the southern and south-eastern portions of the Western Palæarctic Region, Africa as far south as the Cape colony; and in Asia it occurs throughout India to China.

In Europe proper it is a rare bird, and is only known to occur in the south-east. Degland (Orn. Eur. i. p. 623) says that it has been "observed and killed in Spain;" but this is evidently an error, as there appears to be no reliable instance of its occurrence there. Malherbe writes (Faune Orn. de la Sic. p. 142) that he has seen a specimen which, he was assured, had been killed in Sicily; but neither Doderlein nor Salvadori appear to believe that this species has really occurred in Sicily or Italy. In Greece, Dr. Krüper states, it is only a rare straggler; Lindermayer obtained it once from the island of Mykonos, and Von der Mühle from the island of Thermia; Erhard also includes it in his list of the birds of the Cyclades as a summer resident. I do not find any record of its occurrence in Turkey, except that, according to Professor von Nordmann, it is met with on the shores of the Sea of Marmora; but it does not, he says, extend to the northern coast of the Black Sea. In Asia Minor it becomes more common; and Dr. Krüper states that it is quite numerous west of Smyrna. Mr. Danford has brought back several examples from Adalia and the Meander valley, where, he informs me, it is common, both on the coast and on inland waters; and in Palestine it is, according to Canon Tristram, the most conspicuous species in the country, and he met with it there in the winter and also in the summer season.

In North-east Africa it is resident, and very abundant. Von Heuglin writes (Orn. N.O.-Afr. p. 185) that he "met with it on the coast of Egypt and along the Red Sea; but it can scarcely be a permanent resident of the sea-coast. It is always to be met with, however, in the lagoons of the Delta, on canals, and in flooded fields and meadows, as also on the Nile itself and its tributaries in the south-west to the Djur and Kosanga. In Abyssinia it occurs only in the warm lowlands, and appears to be rarer on the White Nile than in Nubia and Egypt." On the western side of North Africa it does not appear to range so far north as on the eastern side; for I find no record of its occurrence in Algeria or Tangier; but it has been obtained at Senegal and Gambia, and Mr. Sharpe possesses an example from the latter locality. It has been obtained at Bissao and Sierra Leone; Captain Shelley met with it at Cape-Coast; and Mr. H. T. Ussher says (Ibis, 1874, p. 49) that it is "very common in Fantee and on the Gold Coast generally. . . . In the river Volta they literally swarm, flying in batches out of the bushes as they become startled." Fraser records it from New Calabar and Fernando Po, Jardine from the Bonny river, and DuChaillu obtained it on the Camma and Ogobai rivers, Monteiro in Angola, and Sala records it from Loanda." Mr. Andersson says (B. of Damaral. p. 59) that he does not remember to have seen it in Damara Land proper, but he occasionally met with it along the periodical watercourses and temporary rain-pools of Great Namaqua Land, and he has reason to believe that it may be found permanently on the banks of the Great Fish-River, where large pools of water containing fish exist at all times of the year. Mr. Layard writes (B. of S. Afr. p. 67), in South Africa "it is not uncommon, and is widely distributed. I have seen it about 'Salt River,' near Capetown, but in greater numbers about the rivers, lakes, and estuaries of the

Knysna, and have received it from Kuruman, Colesberg, and Kaffraria. Mr. Chapman found it all the way to Lake Ngami." Mr. T. E. Buckley speaks of it (Ibis, 1874, p. 364) as being "pretty common in Natal, but much more so on the Limpopo, in the north of the Transvaal;" but he did not meet with it in the Matabile country, as the rivers he visited were mostly sand-rivers. Dr. Kirk, who found it in the Zambesi country, says that it is "frequent throughout the courses of the rivers."

To the eastward it is met with as far as China. Mr. Blanford states that it is rare in Persia, and he only found it common at Basrah, which is outside Persian territory; and Major St. John adds that it is the rarest Kingfisher in Persia, and he only observed it in Central Persia on the canals about Isfahán. It is, according to Dr. Jerdon, found throughout India, Burmah, and Malayana. Mr. A. O. Hume speaks of it as being common in Sindh; and I find it recorded as numerous in most parts of India. Mr. Holdsworth, who met with it in Ceylon, says (P. Z. S. 1872, p. 424) that he frequently met with it at Aripo, and it is particularly abundant on the southern rivers. Mr. Blanford obtained it in the Irawadi valley, in Burmah, and says that it is more common about Ava than in Pegu; Schomburgk records it from Siam; and Swinhoe states (P. Z. S. 1871, p. 347) that it is found in China from "Hainan to Wanchow and upper waters of the Yangtsze;" and he adds (Ibis, 1873, p. 361) that it is a very rare bird in Ningpo, and did not occur on the Yangtsze till they were nearly up in Szechuen, where the river was well south.

In its habits this Kingfisher is a most interesting species; and those naturalists who have been fortunate enough to see it in a state of nature all speak of its extreme beauty on the wing. It frequents not only inland waters, but also the sea-coast, and, like most of the Kingfishers, will sit for long on some elevated open perch on the watch for prey. Von Heuglin, who enters fully into details respecting its habits, says (*l. c.*), "its flight is not very swift, but direct, and steadied by regular beats of the wings, not swift and direct like that of *Alcedo ispida*; and it rises and falls at pleasure on the wing with astonishing agility. One often sees it suddenly glide some distance, altering its direction with a quick jerk, and suddenly stop and hover. Whilst hovering the beak is held perpendicular, the hinder portion of the body and tail being also depressed. So soon as it catches sight of its scaly prey it turns up, lays its feathers close to its body, and drops like a stone into the water, frequently remaining more than ten seconds under the surface. It seldom misses its mark, and either devours the fish on the wing or at one of its resting-places. Its voice is a harsh whistling note, sometimes chirping, but sometimes with a harsh grating sound. In the pairing-season the males frequently fight on the wing, and tumble down close to the surface of the water, uttering loud cries." Canon Tristram, writing on the habits of this Kingfisher as observed by him in Palestine (Ibis, 1866, p. 84), states, "We first saw it on the sea-shore in winter, when, in the months of November and December, immense numbers resort to the sea-coast. They were particularly abundant about Tyre and Sidon, and all the way to Mount Carmel, frequenting the shore, and hovering by dozens over the sea about a hundred yards from land, and occasionally perching with loud cries on an outlying rock. At this time they were very wary, and cost us much trouble to procure. During the most stormy gales of winter they continued, regardless of the weather, to hover over the breakers, ever and anon dashing down into the surf, and apparently diving to the bottom for their prey. Their

flight and actions reminded us very much of the Kestrel. After rising with a somewhat jerking flight, they would poise themselves for several minutes with a gentle quiver of the wing, and then suddenly drop perpendicularly, beak foremost, for a header, or else glide swiftly onwards to take up another aërial post of observation. They are at all times of the year gregarious in small bands." Mr. Monteiro, who obtained it on the west coast of Africa, sent the following note to Mr. R. B. Sharpe, who published it in his 'Monograph of the Alcedinidæ:' viz. "I have frequently observed this Kingfisher on all that part of the west coast of Africa that I am acquainted with, namely from Loando to Little Fish Bay. They are to be seen in numbers on every river, lake, or marsh, whether salt or fresh. Their usual habit is to keep steadily in the air on one spot, five or six feet above the surface of the water, by a heavy flapping of the wings, with their beak hanging down, and now and then dropping like a stone to capture the small fish on which they feed. These they fly off with to a twig or branch to swallow, and rise to hover again as before. They are very noisy, uttering a loud trilling note or screech. The natives capture quantities of small fish by driving a row of sticks across the shallow rivers and lagoons to support a dam of twigs and rushes, leaving openings at intervals, in which are placed baskets or traps to catch the fish as they pass out. These Kingfishers are so abundant that I have often seen them standing one on each stick, stretching in a long line across the lagoon, their showy plumage, brightly reflected on the still surface of the placid waters, forming a very striking and pretty sight. They are very tame, taking no notice of people passing by quite close to them, but are very hard to kill, requiring a good and well-directed charge of shot to bring them down, even at a comparatively short distance." Dr. Jerdon says (B. of I. i. p. 233) that in India "it is very common on the banks of rivers, backwaters, and canals, also on the edges of tanks, and even of pools and ditches by the road-side. Unlike the other Kingfishers, which watch for their prey from a fixed station, and then dart down obliquely on it, this one searches for its prey on the wing, every now and then hovering over a piece of water, and, on spying a fish, darting down perpendicularly on it, and rarely failing in its aim. Now and then during its descent it is baulked, and turns off from its swoop; but I never saw one plunge into the water and turn off from its swoop. I cannot say that I have observed it stay so long under water as Pearson would imply when he states that 'it plunges down dead as a stone under the water, and remains below it so long that the ripple over the surface clears away some time before it comes up again.' Sundevall notices its holding its tail erect when sitting."

The nesting-season of this Kingfisher appears to be about the month of May; but Dr. Leith Adams says that in Egypt it has been known to breed in December. Perhaps the best account of its breeding-habits is that given by Canon Tristram, who writes (*l. c.*) as follows:—"A few breed near the Jordan, in the banks of the Wady Kelt; but the great breeding-place which we discovered was on the plains of Gennesaret, in the banks of the Ain Mudawarah. Here there was a colony of about thirty pairs, only a small proportion, however, of the birds of this species which feed on the teeming myriads of fishes in the hallowed lake. They selected a different part of the bank, and built in a different position from *Halcyon smyrnensis*. Shortly before its entrance into the lake, the Mudawarah forms a hollow secluded pool, with deep banks of mud about twenty feet high above the water, which may have a depth of ten or twelve feet. The sides of this little amphitheatre were perforated all round by the holes of the Great Kingfisher,

but all of them close to the water's edge, about four inches above it. Here on the 28th of April, Mr. Bartlett took two nests of six and four eggs respectively. I revisited the locality on the 21st and 22nd of May, and found great numbers of young birds fledged and able to fish for themselves, while some nests contained from four to six young; but I still secured five nests with fresh eggs in each. The only way of securing them was to strip and swim to the bank, while an Arab threw down a rope from above, which I fastened round my waist while he held the other end; and thus suspended in the splendid tepid bath, I dug away with the mattock let down to me till the eggs were reached. The passages were about three feet and a quarter in length; and the chamber at the end was simply scooped at one end of the passage, not turned at a sharp angle, nor double, like that of the Bee-eater. In one instance I had dug long and laboriously, when out dashed a great rat instead of a Kingfisher, leaving her six naked young to their fate. In no instance were there any bones with the eggs, though, when there were young, there was a festering heap of bones and filth. But there was always an abundantly heaped nest of grass and weeds. In one nest, which had been visited and robbed by Mr. Bartlett, there was a family of three unfledged young; so that the bird must have laid again almost immediately in the same digging. The whole colony sat about on the oleanders, or passed and repassed incessantly during my operations, screaming and shrieking at the intruder most vociferously. The eggs of this species vary in shape more than those of any other Kingfisher with which I am acquainted. Though generally almost spherical, those of two nests we captured were decidedly elongated, in one case much more so than in the other; and the peculiarity was common to the whole sitting in each case."

I possess some of the eggs collected by Canon Tristram, which are roundish in shape, a good deal larger than those of the common Kingfisher and have the surface not so polished. Like these they are pure white in colour when blown; but when the yelk is in them they are pinkish in tinge. In size they average $1\frac{6}{40}$ inch by 1 inch.

The specimens figured are the adult male and female described, both being in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, ♀. Syria (*Verreaux*). *c,* ♂. Gennesaret, Palestine, May 23rd, 1864 (*H. B. Tristram*). *d, juv.* Egypt. *e, f, g,* ♀. Port Elizabeth, S. Africa (*Cutter*).

E Mus. Lord Walden.

a, b. West Africa. *c.* Gambia. *d.* Gaboon. *e.* Zambesi. *f.* White Nile (*Petherick*). *g, h, i, j, k, l, m.* India. *n, juv.* Tonghoo, Burmah.

E Mus. C. G. Danford.

a, ♂, *b, c, d,* ♂. Adalia, December 1874 (*C. G. D.*).

E Mus. H. B. Tristram.

a, ♂. Plains of Gennesaret, March 1st, 1864. *b, juv.* Gennesaret, May 20th, 1864. *c,* ♀. Galilee, March 31st, 1864 (*H. B. T.*).

Genus HALCYON.

Ispida apud Brisson, Orn. iv. p. 499 (1760).
Alcedo apud Linnæus, Syst. Nat. i. p. 186 (1766).
Halcyon, Swainson, Zool. Illustr. i. text to pl. 27 (1820).
Dacelo, apud Lesson, Traité d'Orn. p. 246 (1831).
Entomothera apud Reichenbach, Hand. d. Spec. Orn. p. 12 (1851).
Entomobia, apud Cabanis & Heine, Mus. Hein. ii. p. 155, footnote (1859).

The genus *Halcyon* is a large one, containing, according to Mr. Sharpe, thirty-six species, which inhabit the Palæarctic, Ethiopian, Oriental, and Australian Regions, one species only being found in the Western Palæarctic Region.

In habits these birds differ considerably from *Ceryle* and *Alcedo*; for they not only frequent water but will resort to fields, groves, and gardens, and devour fish, frogs, insects, lizards, grasshoppers, small mammals, &c. &c., and they rarely dive into the water to capture their prey. They are also said to seize butterflies. They are not gregarious, more than two being seldom seen together. They never hover, and do not frequent open ground, but sit on a branch or some elevated perch in some well-sheltered place, and when disturbed they slink away in the coverts in preference to seeking safety in direct flight. Their note is a loud, rattling, harsh scream, which they usually utter when on the wing. They nest in a hole in a bank, and deposit several round glossy white eggs on a few straws at the end of a hole.

The type of the present genus is *Halcyon senegalensis*, an African species; but as our European bird, *Halcyon smyrnensis*, is congeneric, I give its characters, viz.:—bill much longer than the head, straight, stout, pentagonal at the base, then tapering to a point; gape-line straight, commencing below the eye; nostrils basal, exposed, oval; wings moderate, broad, the first quill shorter than the seventh, the third and fourth longest; inner secondaries nearly as long as the primaries; tail rather long, graduated; feet short, the three anterior toes united at the base; tarsus scutellate; claws rather long, arched, acute.



SMYRNA KINGFISHER
HALCYON SMYRNENSIS

HALCYON SMYRNENSIS.

(SMYRNA KINGFISHER.)

The Smirna Kingfisher, Albin, Nat. Hist. Birds, iii. p. 26, pl. 27 (1740).
Ispida smyrnensis, Briss. Orn. iv. p. 499 (1760).
Alcedo smyrnensis, Linn. Syst. Nat. i. p. 186 (1766, ex Alb.).
Martin-pêcheur de la côte de Malabar, D'Aubenton, Pl. Enl. 894 (1765–81).
Alcedo fusca, Bodd. Tabl. Pl. Enl. p. 54 (1783, ex D'Aubent.).
Halcyon smyrnensis (L.), Steph. in Shaw's Gen. Zool. xiii. p. 99 (1826).
Dacelo smyrnensis (L.), Less. Traité d'Orn. p. 246 (1831).
Entomothera fusca (Bodd.), Reichenb. Handb. d. Spec. Orn. p. 12 (1851).
Entomothera smyrnensis (L.), Reichenb. op. cit. p. 13 (1851).
Entomobia fusca (Bodd.), Cab. Mus. Hein. ii. p. 155 (1859).
Entomobia smyrnensis (L.), Cab. tom. cit. p. 155, footnote (1859).
Dacelo fusca (Bodd.), Schlegel, Mus. Pays-Bas, Alced. p. 28 (1863).
Halcyon saturatior, Hume, Stray Feathers, ii. pp. 168 & 531 (1874).

Jeshil Balukdje, Turkish.

Figuræ notabiles.

Albin (*l. c.*); D'Aubenton, Pl. Enl. 894; Reichenbach (*l. c.*), pl. 404. figs. 3088, 3089; Sharpe, Monogr. Alced. pl. 59.

♂ *ad.* capite, nuchâ, colli lateribus et corpore subtùs imo rufo-castaneis, gutture et pectore medio albis: dorso, scapularibus et caudâ suprà lætissimè viridi-cyaneis: uropygio et supracaudalibus cæruleis: remigibus nigris, ad basin albis, primariis (primo excepto) in pogonii externi medio basali pallidè cæruleis, secundariis in pogonio externo lætè cæruleis: tectricibus alarum majoribus nigris viridi-cyaneo marginatis, medianis nigris, minoribus castaneis: rostro rubro, pedibus rubris: iride fuscâ.

Adult Male (Adalia, 19th December). Head and neck (except in front), the hind neck down to the fore part of the back, sides of the neck and breast, and lower parts of the body below the breast rich chestnut-red; throat and breast pure white; back, scapulars, and upper surface of the tail deep cobalt-blue, varying according as the light falls on them to greenish blue; rump and upper tail-coverts rich cobalt, never varying into greenish blue; quills black, white at the base, this latter colour showing clearly on the under surface of the wing; the basal half of the outer web of all but the first primary Cambridge-blue; the entire outer web of the secondaries rich cobalt-blue, primary coverts cobalt; edge of the wing-joint white, larger coverts black, edged with greenish blue, median coverts black, lesser coverts chestnut; under surface of the tail black; bill coral-red; feet vermilion; iris brown. Total length about 11·5 inches, culmen 2·4, wing 5·2, tail 3·7, tarsus 0·7.

Adult Female. Undistinguishable from the male, except that it is, if any thing, a trifle less rich in colour.

Nestling (*fide* Swinhoe, Ibis, 1868, p. 59). Eyelid pale reddish ochre or buff; iris deep umber-brown; bill

deep brown over a reddish ochre ground, which shows through, especially on the under mandible, tip fine orange for about 0·2 inch; inside of mouth light orange-ochre; legs and toes deep madder-brown, orange-buff on the back of the tarsal joint, the underside of the tarsi and the soles of the feet more reddish and sullied; claws blackish brown, with pale tips; head of deeper hue than in the adult; white feathers of the breast narrowly margined with black.

Obs. After a most careful examination of a large series I fail to find any character on which another species can fairly be founded. In general tone of colour the Indian bird is a trifle deeper than the one from Asia Minor and Syria, and specimens from Ceylon and the Andamans are again somewhat darker; but the variation is so gradual, and so irregular in different examples, that it cannot be depended on as a characteristic, and I am therefore unable to agree with Mr. Hume in considering the Andaman bird worthy of specific distinction, more especially as examples from Ceylon and the Andamans so closely assimilate in colour, but the latter have generally a longer wing. In size the specimens from various localities differ not a little, as the following table of measurements of fully adult selected examples will show:—

	Culmen. inches.	Wing. inches.	Tail. inches.	Tarsus. inch.
Adalia, Asia Minor . . .	2·30–2·5	5·00–5·2	3·60–3·7	0·65–0·7
Syria	2·30–2·35	4·45–5·0	3·20–3·6	0.65
India	2·25–2·5	4·50–4·7	3·20–3·5	0·65–0·68
Ceylon	2·15–2·35	4·30–4·7	3·25–3·35	0·65–0·7
Andamans	2·35–2·5	4·90–5·15	3·30–3·5	0·65–0·68
Burmah	2·25–2·35	4·65–4·8	3·30–3·45	0·65

It is only in the south-eastern portion of the Western Palæarctic Region that the present species is met with; but it is found in Asia as far east as China, and as far south as the Andaman Islands, and it is also said to occur rarely in North-east Africa on the borders of the Red Sea. First recorded from near Smyrna as far back as 1740 by Albin, it was for long doubted whether it really did occur in Asia Minor; but later investigation has proved that it is to be met with there regularly, but not numerously. Dr. Krüper informed me that it is "of rare occurrence near Smyrna;" and Mr. C. G. Danford, who has just returned from Asia Minor, sends me the following note:—"I believe that this species does not occur in the northern and north-eastern parts of Asia Minor; and it is rare in the neighbourhood of Smyrna, but may be occasionally met with near Ephesus, and in the marshes near the mouth of the Meander between Kelibesh and Domatia. Proceeding eastward it becomes much commoner, and we found it tolerably abundant on the Duden Soo and other streams near Adalia." I may here pause to say that, according to Dr. Altum (J. f. O. 1863, p. 113) it has once been *seen* near Ems, on the Rhine, by a cousin of the Rev. Mr. Bolsmann, who was well acquainted with the birds of that district, and who described it accurately. Directly he was shown the various Kingfishers in a collection, he at once pointed out *H. smyrnensis* as the bird he had seen. However, as the bird was only seen, and not obtained, there always remains some doubt as to whether he might possibly have been mistaken.

To return to Asia Minor, I find no other record of its occurrence or range there, except that referred to by the late Mr. Strickland, to whom a specimen procured at Macri was sent by Mr. Edward Forbes. It is, however, met with in Palestine, where Canon Tristram obtained it;

but he says (Ibis, 1866, p. 87) that he never found it beyond the limits of the Jordan valley. Unlike the other peculiar species of the Ghor it occurs throughout the whole course of the river; and he met with it close to Banias, on the upper waters of the Jordan. Von Heuglin includes it in his 'Orn. Nordost-Afr.' and says (p. 189), "its occurrence on the Red Sea appears only to be accidental; possibly it is commoner in the morasses and on the brooks along the Gulf of Agabah, and I believe I saw it near Petra." He also adds that the specimen he describes is from Tor, in Arabia Petræa.

To the eastward this Kingfisher is found as far as China. Captain Jones met with it in Mesopotamia; and Mr. Blanford says that it appears to occur not unfrequently in Southern Persia and Baluchistan, wherever trees are numerous; and Major St. John in his notes, for the loan of which I am indebted to Mr. Blanford, writes as follows:—"This Kingfisher is not uncommon in Southern Persia, ascending to considerable altitudes. I have seen it in winter in the valley of Dashtiarjan, 6500 feet above the sea. It is numerous in the swampy palm-groves of the lower valleys, but does not appear to be so fond of gardens as in India. I have not noticed it north of Shiráz in Persia, but it occurs in Mesopotamia." To this I may add that De Filippi also obtained it from Shiráz. In India it is, according to Dr. Jerdon (B. of India, i. p. 225), "abundant in most parts, and is found throughout the whole peninsula and Ceylon, up to the base of the Himalayas, and extending throughout all the countries to the east as far as China." It was obtained in the Andamans by Beavan; and Mr. Davison says (Stray Feathers, ii. p. 168) that it is one of the commonest birds near Port Blair, in the Andamans; but he did not notice it at the Nicobars or at the Great or Little Cocos. To this, Mr. A. O. Hume adds that he saw a few at Macpherson's Straits, but met with it nowhere else (except at Port Blair). Lord Walden having remarked that the Andaman specimens in his collection were intenser in colour than those from other parts of Asia, Mr. Hume proposes (*l. c.*) in case it should be desirable to separate the Andaman form, to call it *saturatior*; but, at the same time that he proposes to add another synonym, he expressly states that he himself would not separate it; and in this I fully agree with him, although in so doing I differ in opinion from so good an authority as my late colleague Mr. Sharpe, to whom, Mr. Hume says (Stray Feathers, ii. p. 531), he has submitted specimens from the Andamans, and he is of opinion that the Andaman *Halcyon* is distinct from *smyrnensis*.

In Ceylon this bird is also said by Mr. Holdsworth (P. Z. S. 1872, p. 424) to be "abundant in in the low country wherever there is water, frequenting alike the neighbourhood of paddy-fields and the banks of rivers. It is perhaps less numerous in the north than elsewhere; but it was not uncommon at Aripo." In China, according to Mr. Swinhoe, it is common and resident from Canton to the river Yangtsze; and he also obtained it in Formosa and Hainan.

In its habits this Kingfisher differs greatly from the Pied Kingfisher; and unlike that species it rarely feeds on fish, and seldom, if ever, dives into the water after fish. I have never had the opportunity of seeing it alive; but Mr. Danford, who has lately shot it in Asia Minor, informs me that it is "a somewhat shy and solitary bird, fond of sitting for hours perched on an elevated situation, and never exhibiting that beautiful habit of hovering which is so characteristic of *C. rudis*, a species which is very common in the same districts." Dr. Jerdon states that it "prefers a wooded country, but is not found in the thick forests, and is to be met with about

most large villages and cantonments. It frequents banks of rivers and brooks, edges of tanks, as also the neighbourhood of wells and wet paddy-fields; but it is as frequently found away from water, in groves of trees, gardens, open jungle, and dry cultivation, perching upon trees, poles, walls, old buildings, and any similar situation. Here it watches for a land-crab, mouse, lizard, grasshopper, or other insect, and pounces down upon it, returning to its perch to devour it. Near water it catches fish (for which it sometimes, though rarely, dives), frogs, tadpoles, and water-insects." Canon Tristram also writes (*l. c.*) as follows:—"It is in all its habits very different from the lively Pied Kingfisher. It never hovers, never is seen in the open ground, but loves to sit moodily for hours on a slender bough overhanging a swamp or pool, where the foliage helps to conceal its brilliant plumage, and where, with cast-down eyes and bill leaning on its breast, it seems benumbed or sleepy until the motions of some lizard or frog in the marsh beneath rouse it to temporary activity. When disturbed it rather slinks away under cover of the overhanging oleanders than trusts for safety to direct flight. Nor does it confine itself to ponds or marshes, but frequently it will perch on a bush in a barley-field watching for lizards or snakes and always bringing its prey back to its perch to devour at its leisure. It will swallow entire very large reptiles. In one I found a snake eighteen inches long, entire; but I never found in its crop any fish, though it had frequently fed on locusts, most generally, however, on reptiles, whether frogs, toads, lizards, or serpents. It is not gregarious, and we seldom saw more than two together. It is both sedentary and sluggish in its habits, though very wary. The first specimens we obtained were at Jericho, in January, where it resorted to the jujube-trees overhanging the stream from Ain Sultan (Elisha's fountain). Afterwards we met with it all round the coast of the Dead Sea, by the banks of Jordan in thickets, in the swamps of Huleh (Merom) by the Upper Jordan, but especially on the plains of Gennesaret." Mr. Danford informs me that its note is harsh and discordant, and is always uttered in flight.

The Smyrna Kingfisher breeds in Asia Minor and Palestine late in April or early in May, its eggs being deposited at the end of a tolerably deep hole burrowed in a bank. Layard says that sometimes it builds its nest in a hole in a decayed tree; but this statement appears to lack confirmation. In India, according to Mr. A. O. Hume (Nests and Eggs of Ind. B. p. 105), "it breeds all over the country from March to July. It lays from four to seven eggs, five being the normal number, in a hole which it excavates for itself, and which varies in length from a little over one to more than three feet, although, as a rule, it does not exceed a couple. This hole is from $2\frac{1}{2}$ to 3 inches in diameter, and terminates in a chamber some 4 inches in height and 8 in diameter. I have never found any nest, so to speak; but both the passage and chamber often contain remains of frogs, mole crickets, and the like." Canon Tristram, who met with it breeding in Palestine, writes (*l. c.*) as follows:—"On the plain of Gennesaret, on April 28th, Mr. Bartlett took a nest of five eggs, fresh, in a hole in a bank about six feet high, facing, not a stream, but the lake itself. On the 23rd of May I took a nest of four eggs, slightly incubated, in a bank by the stream Mudawarah, about half a mile above the colony of *Ceryle rudis*. The nest was at the end of a tunnel, not more than two feet in, and directly facing the entrance, with a very few straws for lining. The entrance was about six inches above the level of the water, and in a deep, sluggish part of the stream. The eggs were nearly spherical, and considerably larger than those of *C. rudis*." I possess only one egg of this bird, presented to me

by Canon Tristram. It is pure white, and resembles those of *C. rudis*, but is larger, approaching closely in size average eggs of the Roller.

The specimen figured is an adult male from Adalia, and is the same bird as is above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Adalia, December 19th, 1874 (*C. Danford*). *b*, ♂. Syria (*Verreaux*). *c*. India. *d*. Miyani, India (*Whitely*).

E Mus. Lord Walden.

a. Syria. *b*. Bengal (*Cutter*). *c*, *d*, ♂. Umballah, India, November 1866 (*R. C. Beavan*). *e*. Maunbhoom, India, March 1864 (*Beavan*). *f*. Candeish. *g*, *h*. Miyani, India (*Whitely*). *i*, *j*. Coorg. *k*. Nepal. *l*. Malaba. *m*, *n*, *o*, *p*, *q*, *r*, *s*, *t*. Ceylon (*Colonel Maitland*). *u*, *v*, *w*, *x*, *y*, *z*. Ceylon (*Chapman*). *aa*, *ab*, ♂, *ac*, ♀. Andamans, December 1872 (*R. G. Wardlaw-Ramsay*). *ad*, *ae*, *af*, *ag*, *ah*. Tonghoo, Burmah (*Whitely*). *ai*. Singapore. *ak*, *al*, *am*. Malacca (*Marshall*). *an*. Formosa, June 1865 (*R. Swinhoe*).

E Mus. C. Danford.

a, ♂. Adalia, December 24th, 1874. *b*, ♀. Adalia, January 18th, 1875 (*C. Danford*).

E Mus. H. B. Tristram.

a, ♂. March 1st, 1864. *b*, *juv.* May 20th, 1864, Plain of Gennesaret, Palestine (*H. B. T.*). *c*, ♀. Galilee, March 31st, 1864 (*H. B. T.*).

Family CORACIIDÆ.

Genus CORACIAS.

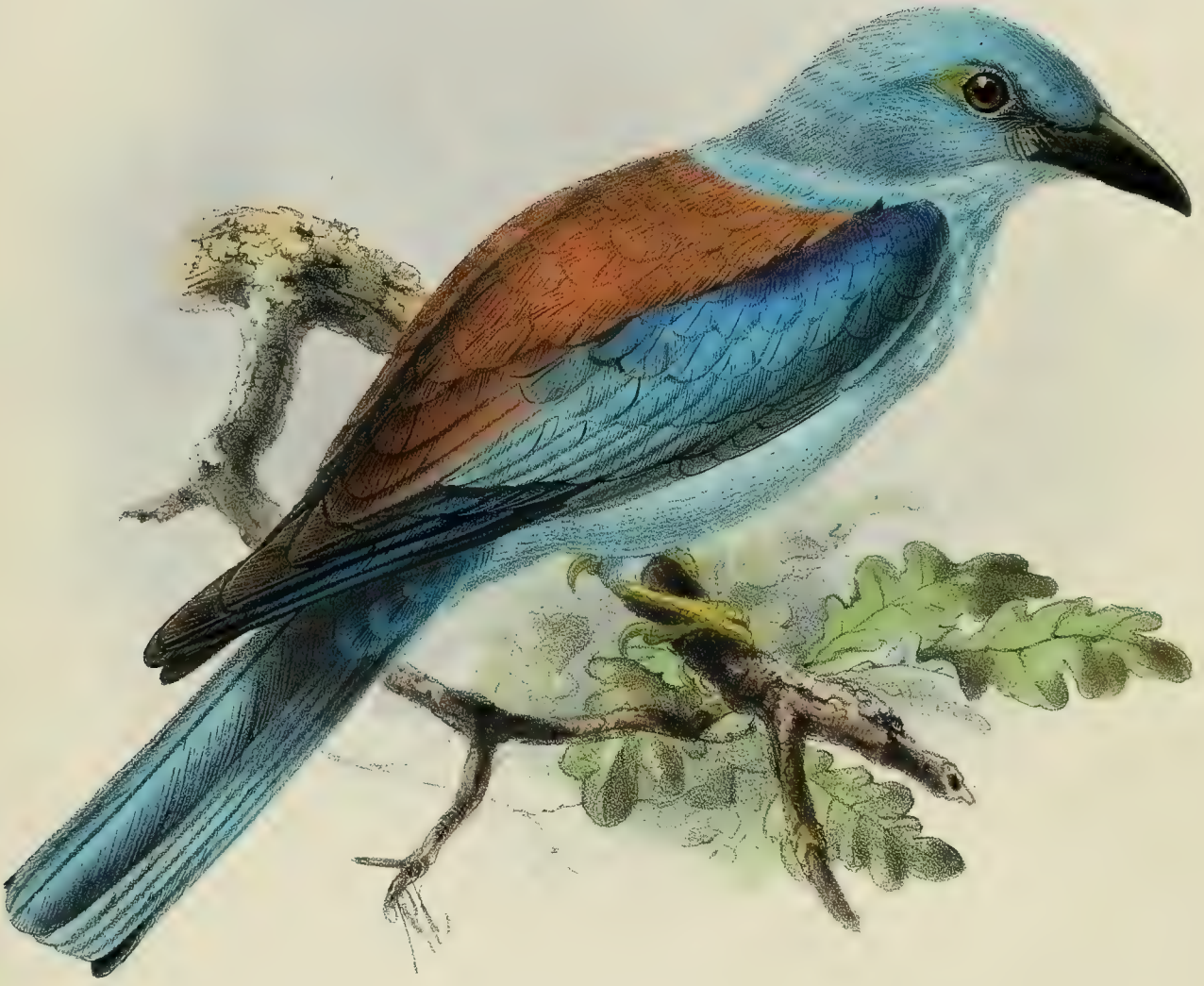
Galgulus apud Brisson, Orn. ii. p. 69 (1760).
Coracias, Linnæus, Syst. Nat. i. p. 159 (1766).

The Rollers are, as a rule, richly coloured birds, and inhabit the warmer portions of the Old World, being found in the Palæarctic, Ethiopian, and Oriental Regions—a closely allied genus, *Eurystomus*, being represented in the Australian Region. Only two species inhabit the Western Palæarctic Region, one being a resident, whereas the other is only a rare straggler from the Oriental Region.

The Rollers are restless and uneasy birds, but shy or not according to circumstances; for in some parts of the east, where they are not molested, they are tolerably easy of approach, whereas in others, where they have been subject to persecution, they are as shy as Jays. They frequent groves, gardens, and fields where hollow trees are scattered about, are noisy and restless, often flying from tree to tree uttering loud screams; and on the wing they are swift, flying much like a pigeon. They hop heavily and awkwardly on the ground; and when moving about amongst the trees they fly from branch to branch, not hopping, like so many of the perching birds. They feed on insects of various kinds, worms, frogs, &c., but never on grain. They nest in hollow trees, holes in banks or old ruins, and deposit several pure white glossy eggs on the chips of wood at the bottom of the tree-hollow, or else they make a clumsy kind of nest of roots, grass, straw, hair, &c.

The generic title *Coracias* is, as I have recently convinced myself, masculine, therefore the common Roller should stand as *Coracias garrulus*, and the Indian Roller as *Coracias indicus*.

Coracias garrulus, the type of the species, has the bill nearly as long as the head, higher than broad, broad at the base, but compressed towards the tip, which is decurved and slightly notched; gape-line nearly straight, the gape furnished with decurved bristles; nostrils basal, linear, partly concealed by feathers; a bare space behind the eye; wings rather long and broad, the second quill longest; tail rather long, nearly even; feet very short, the tarsus covered in front with four larger and three inferior broad scutellæ; claws of moderate length, arched, acute.



CORACIAS GARRULA.

CORACIAS GARRULA.

(COMMON ROLLER.)

Coracias garrula, Linn. Syst. Nat. i. p. 159 (1766).
Galgulus garrulus, Vieill. Enc. Méth. ii. p. 866 (1823).
Coracias loquax, Licht. Nomenc. Av. p. 68 (1854).
Coracias bengalensis, Keul. Ned. Tijdschr. iii. p. 380 (1866).

Rollier, French; *Galgulo*, *Carlanco*, Spanish; *Rollieiro*, Portuguese; *Ghiandaja marina*, Italian; *Blauracke*, German; *Ellekrage*, Danish; *Blaaraake*, Norwegian.

C. fronte et mento albidis: pileo toto, tectricibus alarum et corpore subtus viridibus, genis cum gutture imo argenteo-cyaneo longitudinaliter striatis: tectricibus alarum minoribus et uropygio violaceis: dorso superiore cum scapularibus et secundariis interioribus dilute cinnamomeis: rectricibus duabus mediis olivascenti-viridibus, reliquis ad basin viridibus apicem versus cyanescentibus, duabus extimis nigro terminatis.

Adult Male. Forehead and chin hoary white; crown of head and back of neck pale blue, tinged with green in some lights; upper portion of the back and scapulars pale reddish brown; least wing-coverts rich ultramarine, all the rest of the wing-coverts pale blue; quills brownish black, the primaries slightly glossed with dull blue on the outer web, the inner web for the most part deep ultramarine on the under surface; the secondaries brownish black, pale blue at the base, slightly glossed with ultramarine on the under surface, the outer web glossed with greenish blue or ultramarine, but those feathers nearest the back becoming reddish brown on the outer web, until the dorsal secondaries are nearly entirely of the same colour as the scapulars; lower portion of the back and rump deep ultramarine, varied in some lights with pale blue; upper tail-coverts greenish blue; tail blackish brown, the two middle feathers dirty green, all the other feathers at their bases dull blue above, rich ultramarine below, the tips pale blue, the two outer feathers having a dull blue spot at the tip; cheeks and throat pale blue, longitudinally marked with narrow lines of silvery blue; rest of the under surface of the body pale greenish blue, a few of the dark shafts of the feathers occasionally showing; under wing-coverts pale blue like the breast; bill black; feet yellowish brown; iris brownish grey. Total length 12 inches, of bill from front, 1·3, wing 7·6, tail 4·4, tarsus, 0·7, middle toe 1·05.

Adult Female. Similar to the adult male.

Young Female. Head pale brown, glossed with dull green, traces of brighter colour being apparent on the cheeks, sides of the head, and nape; back and scapulars dull reddish brown; least wing-coverts pale blue washed with ultramarine, all the other wing-coverts pale blue washed with reddish brown; quills blackish brown, above beautiful ultramarine below, the secondaries pale blue at the base, those nearest the back being entirely reddish brown like the scapulars; lower part of the back and rump pale blue, becoming washed with ultramarine; tail blackish brown, the two centre feathers dull greenish, the rest of the feathers dark ultramarine at the base of the inner web, the outer web and tip of each feather pale blue, a silvery light playing upon the feathers when seen from above; chin and forehead hoary white; throat and cheeks dull greenish blue, the central white streaks very distinct; upper portion of

the breast pale brown glossed with greenish blue; abdomen very pale blue; under wing-coverts rich pale blue; bill black; feet reddish brown. Total length 12·5 inches, wing 7·9, tail 5·4, tarsus 0·7, middle toe 1·0.

The brightly plumaged Roller, although common in most parts of the European continent, has but rarely occurred in Great Britain, though from its brilliant coloration it is a bird not likely to be overlooked. Several instances, however, of its capture in England are on record, chiefly, according to Yarrell, in the eastern and north-eastern counties.

Our friend Mr. Gatcombe has kindly given us the following note of the capture of a Roller in the south of England:—

"In June 1865 I examined a fine male Roller killed in a hayfield at Spriddlestone Farm, near Plymouth. It was accompanied by another bird of the same species, which was not obtained. Its stomach contained the remains of beetles and long white skins of the larvæ of beetles or moths—I think, the former. It was rather bold, and came down very near the hay-makers whilst at work, which induced a farmer's boy to get a gun and shoot it. The specimen is now in the collection of Mr. F. C. Hingston, of Plymouth."

Specimens, however, have been obtained as high north as the Orkneys, whence Sir William Jardine and Mr. Bullock procured the examples in their collections. Mr. Thompson has included it among the birds of Ireland, on the authority of two specimens obtained in Wexford and Sligo. In Denmark it appears, but Kjærbölling considers it not common in any part. Nilsson states that it is found in pairs during summer in most of the non-evergreen woods in Southern and Central Sweden, and has also been seen in the Djur-gården Park, near Stockholm; between Örebro and Westerås it is found numerously, but is rare in the north. It leaves Sweden in August or about the middle of September. Mr. R. Collett, in his work on the ornithology of Christiania, speaks of it as an accidental visitor, and names several instances of its occurrence.

Mr. Meves has written to us as follows:—

"On my journey to Archangel I only saw the Roller twice, at the Ladoga and Onega lakes. Here at Stockholm, as also in Central and Southern Sweden, it is not uncommon. In Upland it is scarcer, and of very rare occurrence in Gestrikland. It breeds in holes in old oaks, aspens, &c., and generally lays four or five eggs. I have, however, one sitting of six eggs from Styria."

In Finland it is a rare and occasional visitant in the south, having only been met with to the north as far as Helsingfors. Throughout the whole of the Baltic provinces and Pomerania it is not uncommon, being there a bird of passage, and leaving in the winter. Holland and the Netherlands appear to be seldom visited by the Roller; and in Belgium and Luxembourg it is a rare and accidental visitant. Degland and Gerbe say that in France it is found during migration in the Franche Comté, Lorraine, Champagne, and the north, and a few breed in the south of France. In Spain it is abundant, but in Portugal is more rare.

Respecting the Roller, as observed by him in the former country, our friend Mr. Howard Saunders has sent us the following note:—

"This bird generally arrives in Andalucia early in April; but in 1868 I observed a small flock near Jaen on the 13th of March, an unusually early appearance: it leaves the country in November. It swarms throughout all the districts of the country not burnt up. Between Seville and Cordova, for instance, a score might be seen at almost any moment on a fine April

day, keeping company with the train, which seems to have a sort of attraction for them, whereas the Bee-eater, which is equally abundant, seldom flies with the train. It breeds in May, nesting in holes of trees, walls, old towers, and also in banks, but never in what can be called colonies. The eggs seldom exceed five; and I think four is the average number. During the pairing-time they perform sundry grotesque antics and gyrations in the air, throwing somersaults, as I have also seen the Raven do."

Count Salvadori says it is not plentiful in Sardinia, but has been seen near Oristano in small numbers. As regards its occurrence in Italy, he writes:—

"This bird is rather scarce, although specimens are met with annually in one or the other part of Italy. It arrives in spring, and leaves us in the autumn. A few have also bred here; Bonaparte mentions some old ruins not far from Rome as nesting-places of this bird. When I was at Barcellona, in Sicily, I saw, as I thought, some of these birds flying along a ravine in company with Jackdaws, and they appeared to have their abode there. Their flight is heavy, and resembles that of a Crow or Jay."

According to Malherbe, great numbers inhabit Sicily in the summer.

Throughout all Germany the Roller is not a rare bird, and in Austria and Styria is common during the summer, as also along the whole district of the Danube. In Turkey it is also common; and Lindermayer tells us that it comes early in April and breeds in Greece. Lord Lilford states that it arrives in great numbers in Corfu about the middle of April; it only remains a few days, but breeds on the mainland.

Demidoff found it plentiful on the Black Sea, arriving in the Southern Crimea late in March. Eversmann says that it was common at Orenberg, going northward as far as Kazan. To the eastward it is found in Asia Minor, Persia, Mesopotamia; and Jerdon says it is found in the extreme north-west of India; according to Lord Walden and Capt. Hutton it is very common in Cashmere and Afghanistan. Pallas states that it occurs in Lower Siberia and breeds in the Altai Mountains—arriving in April, generally with the Bee-eater. Dr. Tristram also found it common in Palestine; and Capt. Sperling considers it to be plentiful in the countries of the Mediterranean. In Malta it is abundant, and we have received many specimens from Mr. C. A. Wright.

In Algeria Mr. Salvin found them "not unfrequently about the wooded hills which skirt the elevated plains of the Eastern Atlas;" here they were breeding in May. Loche says it is very common in Algeria. Mr. Tyrwhitt Drake saw it frequently in Tangier and Eastern Morocco about the middle or end of April, and states that it breeds further down the west coast.

Mr. J. H. Gurney, jun., has favoured us with the following note:—

"The Roller is a summer migrant in Algeria, and arrives with the Woodchat. I should not say that any of them wintered even in the most southern oases. I shot a specimen at El Ateuf from the top of a headless palm: it fell shrieking into a deep camel-path, and was only killed with difficulty. I afterwards saw Rollers in the 'dayat' of Tibrem, consorting with the Hoopoe and the Moorish Magpie, and giving utterance to their loud cry of 'shugrug.' I witnessed one mob a *Neophron*, and make feints of attacking him.

"The Roller is known to the French *colon* by the name of *Geai d'Afrique*, as has been stated in 'The Ibis' by Dr. Tristram."

Captain Shelley, who has observed the Roller in Egypt, writes that he "first met with a pair near Edfoo, Upper Egypt, on the 26th April, 1870. On the 29th saw four specimens. They kept to a scattered clump of acacia trees, and would not be driven to the palm trees, although there was a large wood of them some few hundred yards distant; but occasionally they lighted upon the open ground where the corn had been carried. They were very shy; but I obtained three by having them driven over my head while I hid behind a bush. They probably do not arrive in Egypt on their way down the Nile before the 20th April. I met with them invariably in pairs; but they do not, I believe, breed in Egypt. Their food consists of beetles."

Dr. Th. von Heuglin (Orn. N.-O. Afr. p. 172) writes:—

"It is a migrant in N. E. Africa and Arabia. In Egypt it arrives from the south singly or in small flocks late in April, and remains a short time. It is then found in fields, meadows, and olive-gardens."

Mr. C. W. Wyatt, who has lately returned from a journey in the peninsula of Sinai, has sent us the accompanying observations:—

"I met with the Roller at Ahabar, at the head of the gulf of the same name, in the palm groves, at the beginning of April. Whether they stay there to breed or were only pairing I do not know. A few days later I saw a single bird on the Humeihgumah plain, on the highlands of Edom, between Ahabah and Petræa, sitting, for want of something better, on one of the little desert plants peculiar to those regions. It was evidently on its passage."

"The Blue Roller," writes Dr. Brehm, "appears in Egypt in the end of July, associated in small flocks. It is not rare in August near Alexandria, and is hunted and eaten by the Italian inhabitants of the town. I found it at Wadi Halfa in the November of 1847, in 1848 on the 6th of October, and on the 28th of September in 1851, in the act of moulting. I found it, moreover, in 1848, on the 28th of January, at Halfai, on the lower part of the Blue Nile, and in 1850 on the upper part of the same above Chartum; in 1851, on the 26th of August, near El Mucheiref (vigorously moulting); on the 14th of September in the province of Dongola; on the 19th September in Dar el Mahass. We find in Egypt the Rollers distributed everywhere during the whole winter, and isolated in the Durrah-fields, where they sit on the cut stems of the Durrah, which are left several feet high, and, like the Shrikes, which are also there abundant, watching for insects."

Concerning the Roller in Palestine, Dr. Tristram writes (Ibis, 1866, p. 81) as follows:—

"The Bee-eater (*Merops apiaster*) and the Roller (*Coracias garrula*) reappeared simultaneously, but, unlike the Hoopoe, in large flocks, which very gradually dispersed in the case of the Roller, while the Bee-eaters remain more or less gregarious throughout the summer. The first time we obtained specimens of either was on the fourth of April, in the plain of Bethshean, to the east of Mount Tabor. On the 12th of April I reached Ain Sultan (Jericho) alone, and remained there in solitude for several days, during which I had many opportunities of observing the grotesque habits of the Roller. For several successive evenings great flocks of Rollers mustered shortly before sunset on some *dôm* trees near the fountain, with all the noise, but without the decorum, of Rooks. After a volley of discordant screams, from the sound of which it derives its Arabic trivial name of 'schurkrak' (شرقراق), a few birds would start from their perch, and commence a series of somersaults overhead, somewhat after the fashion of Tumbler

Pigeons. In a moment or two they would be followed by the whole flock, and these gambols would be repeated for a dozen times or more. In about a week the immigrants dispersed; but a large number, some twenty or thirty pairs, took up their abode in the mouth of the gorge of the Wady Kelt, where they began at once to excavate the bank for their nests. After this dispersal not a Roller ever came back to the *dôm* trees where they had roosted at first, though scarcely more than a mile distant from the new settlement. The Wady Kelt was the only place where I met with what could strictly be termed a colony; elsewhere the Roller was distributed in pairs, but not restricted to any one character of country, nor to any special breeding-places. The neighbourhood of villages, especially where there were ruined churches and mosques, was sure to be enlivened by its brilliant plumage and sprightly presence. It frequents the whole extent of the Ghor, where the *Scarabæi* and other sand-beetles supply it with abundance of food; it is scattered through the whole of the wooded country and forests of Galilee and Eastern Gilead, and especially abounds in open plains with a few clumps of trees, like that of Gennesaret. Everywhere it takes its perch on some conspicuous outstanding branch, or on the top of a rock, where it can see and be seen. The bare tops of the fig-trees, before they put forth their leaves, are, in the cultivated terraces, a particularly favourite resort. In the barren Ghor I have often watched it perched unconcernedly on a knob of gravel or marl in the plain, watching apparently for the emergence of beetles from the sand. Elsewhere I have not seen it settle on the ground. Like Europeans in the East, it can make itself happy without chairs and tables in the desert, but prefers a comfortable easy chair when it is to be found. Its nest I have seen in ruins, in holes in rocks, in burrows in steep sand-cliffs, but far more generally in hollow trees. The colony in the Wady Kelt used burrows excavated by themselves; and many a hole did they relinquish, owing to the difficulty of working it. But so cunningly were the nests placed under a crumbling treacherous ledge, overhanging a chasm of perhaps one or two hundred feet, that we were completely foiled in our siege. We obtained a nest of six eggs, quite fresh, in a hollow tree in Bashan, near Gadara, on the 6th of May. It is noticed by Russell among the birds of Aleppo."

In winter the present species visits South Africa, and has even occurred in Madagascar. From Natal it has been more than once sent; and the late Mr. Andersson obtained specimens in Damaraland. M. Jules Verreaux has received it from Senegal; Weiss obtained it in the Island of St. Thomas, and Keulemans in Princes' Island. The latter gentleman has sent us the following note:—

"When in Princes' Island I shot two specimens of the common Roller. They were very shy and difficult to procure. The first I killed proved to be a female, and had the legs dark sandy colour, the iris deep hazel, and the beak dark horn-colour, the inside of the mouth being yellow. Shortly after, I shot another, which, from its brilliant plumage, was probably the male of the former specimen; but it fell in such dense jungle that I was unable to find it. I may add that I have once myself shot the Roller in Holland, and during the winter of 1861 there were five individuals killed near Rotterdam, and one was caught in a snare intended for a Thrush. It sometimes occurs, but is altogether a rare visitor to Holland."

The trivial name Roller is doubtless derived from the curious aerial evolutions in which this species indulges, and which are so well described by Naumann, whose notes we translate below,

and feel that we need make no apology for so doing, as we know no observer who has succeeded in so accurately describing the habits of birds. He writes as follows:—

"The Roller is always restless and uneasy, moving from tree to tree, where he always settles on the summit or on a dead branch. When undisturbed he is fond of sitting in the sunshine, but during rainy weather is dull and moping. It never *hops* about among the branches, but *flies* from branch to branch, now and then descending to the ground, where it hops heavily and with an awkward demeanour. Its flight is quick, very easy, and much resembles that of a Pigeon; in flying straight it flaps the wings quickly, turns and overbalances itself often, and glides or shoots through the air for some distance before dropping on to a dead branch. The Roller's voice may be best compared to that of the Magpie. They continually utter a deep harsh *Racker-racker-racker-racker*, which is very quickly uttered when they are squabbling; and with this they mingle a harsh *rräh*. When sitting peaceably, the note is a high *rack* and *rack-kack*, and also a plaintive high *kräh*, not unlike that which a young Jackdaw sometimes utters; this last is their call-note. These notes they often vary; and the bird is generally heard before he is seen. In fine weather the male rises in the air near where the female is incubating, uttering a single *rack*, *rack-kack*, &c. until he attains a considerable height, from which he suddenly falls, always turning a somersault, and throwing himself here and there in the air, uttering quickly the following *räh-räräh-rräh-rrä*, &c. &c., which he always changes to the *rack* as soon as ever he begins to turn his somersault, and then returns to his seat on a dead branch. This appears to represent his song."

In certain places, however, the Roller is not so shy as in others; witness the following remarks by Capt Rowland M. Sperling (Ibis, 1864, p. 283):—

"In most accounts of the Roller's habits it is stated to be a shy bird, frequenting woods and forests; my experiences of it are exactly the reverse. I think observations are often made on the habits of birds in the vicinity of towns or thickly populated districts, where, from being so much exposed to raids from the human species, they would naturally be more shy than in more retired and natural haunts. On the Plain of Sharon, where the distance between trees is measured by miles, I have seen Rollers in the greatest abundance, their beautiful green bodies bending the slender reeds of a swamp, apparently waiting for frogs to make their appearance from the cool depths below. I could certainly have shot twenty a day without exciting myself about them."

The Roller generally chooses the hole of a tree for its nesting-place, more often that of an oak; but it is not very particular in its choice. The hole is generally at some distance above the ground, and seldom, if ever, within reach of a person standing on the ground. The hole when chosen is lined with roots, grass, straws, &c. so as to form a somewhat warm nest, and in it are deposited four or five glossy white eggs. In Pomerania and the Baltic Provinces, where Dresser has several times taken its nest, it has eggs late in May or early in June.

According to Naumann it chooses a sandy country as its breeding-home, and affects thin woods where old oaks are scattered through, and which are adjacent to open fields, and, near large forests, particularly of pines, makes its nest in hollow oak, ash, or other trees, lining the interior with roots, straw, feathers, and hair; and the male and female incubate in turn for the space of not quite three weeks. When breeding they sit so close that, though at other times very shy, they may be caught on the nest.

Mr. Salvin, who found it breeding in North Africa, remarks that there it makes no nest, but merely deposits its eggs on the chips of dead wood in the hole of a tree. Lord Lilford found its nest in the walls of a ruined house at Delvino, in Greece, and on the banks of the Kalarto river, near the village of Mursyah, in a hole in the bank, the nest merely consisting of a few twigs carelessly put together. According to Lindermayer, in Greece it more generally nests in the old walls of the ruined Turkish houses than in hollow trees; and Dr. Otto Finsch states that in Bulgaria it sometimes places its nest in a hole in the ground, which it digs itself.

We have before us a series of eggs from Dresser's collection, taken in Pomerania and Southern Austria (Styria), all of which are glossy white in colour, resembling in texture Woodpecker's eggs. The smallest of these measures $1\frac{13}{40}$ inch in length by $1\frac{5}{40}$ in width, and the largest $1\frac{20}{40}$ inch in length by $1\frac{7}{40}$ in width.

The Roller is strictly insectivorous. Naumann, who can be fully depended on, says:—

"Its food consists of all sorts of insects, beetles, grasshoppers, larvæ and caterpillars, worms, and small frogs. They pick most of the insects up from the ground; and I have never seen them catch an insect on the wing, or hop about on the branches after them. Those who say that they eat grain and swallow whole ears of it have no good ground for the assertion; for they eat nothing in the shape of vegetables. Caged birds when forced to eat vegetable matter die from it; and I can state for certain that none that I have dissected had any thing but the remains of insects in their stomachs."

Thus there is no doubt that there are few birds more useful to the husbandman than the Roller.

Mr. T. E. Buckley, who has observed the Roller in South-eastern Europe, has kindly sent us a note on its habits:—

"The Roller is extremely abundant in Turkey, where they first arrived about April 20th. In the early morning these birds were very noisy, chasing one another from tree to tree with harsh screams. Other favourite resorts of theirs were the telegraph posts and wires. Although so abundant, I do not remember having seen them alight on the ground. The only nest I ever took was in Sweden, in June 1867. It was in the hole of a tree, probably an old Woodpecker's nest, and the four eggs were laid on the bare wood. The old birds were rather shy; but I succeeded in shooting the male. Above the Roller's nest was another hole, in which two Common Swifts were building."

To Mr. Thomas Robson, of Ortakeny, we are indebted for the following interesting communication:—

"This species is numerous in the spring and autumn migrations in Asia Minor and Turkey in Europe. Quantities of them are shot by sportsmen, and are prized for food; in the autumn they feed almost entirely on locusts, and are then very fat. They affect mountains and the open country where low brushwood is thinly scattered, although sometimes found in valleys. They sit very much on low bushes or low trees, watching for a long time for their food, which generally consists of beetles; these they seize either in flight, or by a stoop to the ground when they see them moving. They also sit much on low clods of earth on cultivated ground, watching for beetles, locusts, &c.; and as soon as the latter move, the sharp-sighted Roller pounces down on them in a moment. At the time of migration they congregate both in small and large flocks.

but when feeding are much scattered. The movement of their wings in flight reminds one of the Peewit; but they have also the peculiar swing of the Jackdaws at intervals when flying. They are very partial to nesting in holes of old bridges, or of trees &c., like Jackdaws; one of their breeding-stations is at Brousse, Asia Minor. The male is of a darker green than the female; and the adult birds in spring have the outer feather of the tail longer than the others, and tipped with dark blue. The Turks call this bird *Alla Carga*, or Beautiful Crow."

Our descriptions of the adult birds have been taken from Spanish specimens given us by our friend Mr. Howard Saunders. The young bird described above is a specimen shot by the late Mr. C. J. Andersson, at Otjimbinque, in the Damara country, on the 26th January, 1865.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Alexandria (*S. Stafford Allen*). *b*. Seville (*Howard Saunders*). *c, d*. Egypt (*G. E. Shelley*). *e, f, g*. Malta (*C. A. Wright*).

E Mus. R. B. Sharpe.

a, b. Damaraland (*Andersson*).

E Mus. Lord Lilford.

a, b, c. Aranjuez, Spain (*Lilford*).

E Mus. H. B. Tristram.

a, b. Mount Tabor (*H. B. T.*). *c*. Algiers. *d*. Koleah Forest, Algiers (*H. B. T.*). *e*. Transkei, South Africa (*H. Bowker*).

E Mus. Howard Saunders.

a, b. Seville, Spain (*H. S.*).



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W Hart lith

INDIAN ROLLER.

CORACIAS INDICA.

CORACIAS INDICUS.

(INDIAN ROLLER.)

The Blue Jay from the East Indies, Edw. Gleanings, vii. p. 247, pl. 326.
Galgulus mindanoensis, Briss. Orn. ii. p. 69 (1760).
Coracias indica, Linn. Syst. Nat. i. p. 159 (1766, ex Edw.).
Coracias bengalensis, Linn. Syst. Nat. i. p. 159 (1766).
Galgulus nævius, Vieill. Tabl. Encycl. Méthod. ii. p. 868 (1823).
Coracias nævius (Veill.), Wagl. Syst. Av. genus *Coracias*, no. 3 (1827).

Figuræ notabiles.

Edw. *l. c.*; D'Aubenton, Pl. Enl. 285.

Ad. pileo viridi-cæruleo, fronte rufescenti-cervinâ: collo postico purpureo-cervino: corpore suprà sordidè viridi-cinereo fusco tincto, uropygio viridi-cæruleo: supracaudalibus saturatè cæruleis: remigibus primariis pallidè cæruleis, fasciâ magnâ centrali saturatè cæruleâ, secundariis ad basin pallidè cæruleis et in parte apicali saturatè cæruleis: tectricibus alarum majoribus viridi-cæruleis, et tectricibus minoribus saturatè cæruleis: gulâ, gutture et pectore purpureo-vinaceis, cervino-albido striatis: corpore reliquo subtùs pallidè viridi-cæruleo: rostro fusco: iride rufescenti-fuscâ, marginibus palpebrarum flavis: pedibus aurantiaco-flavis.

Juv. adulto similis, sed coloribus sordidioribus.

Adult (S. India). Crown rich blue-green, a narrow rufous-buff line at the base of the bill over the forehead; hind neck warm purplish buff; back, scapulars, and some of the inner secondaries dull parrot-green; rump blue with a greenish tinge, becoming rich deep cobalt-blue on the upper tail-coverts; primary quills sky-blue with a broad cobalt-blue central band across the wing, and tipped with deep blue, secondaries sky-blue on the basal and cobalt-blue on the terminal half; larger wing-coverts blue with a greenish tinge, lesser coverts deep cobalt-blue; tail cobalt-blue with a broad sky-blue band, the central rectrices uniform greenish blue; chin, throat, and breast light vinous purple striped with creamy white or creamy buff; lower abdomen, flanks, and under tail-coverts pale greenish blue; bill dusky brown; iris dark reddish brown; eyelids yellow; legs dusky orange-yellow. Total length about 13·5 inches, culmen 1·3, wing 7·2, tail 5·2, tarsus 1·0.

Young (S. India). Differs from the adult in being rather duller in colour, the throat and breast especially being more of a tawny colour, and with scarcely any trace of purple.

An inhabitant of India, this Roller ranges westward into Persia, and, as a rare straggler, even into the Western Palæarctic Region. There is one undoubted European-killed example in the museum of the Bebek College, at Constantinople. Several years ago Mr. Danford made a careful examination of and sent me a detailed description of this specimen; and subsequently it was examined by Messrs. Sclater and E. C. Taylor, who wrote (Ibis, 1876, p. 63) respecting it as

follows:—"A single mounted specimen of the Indian Roller is in the collection, which is stated to have been shot on the railway-line on the Asiatic side of the Bosphorus, between Haider Pacha and Ismidt. Mr. William Pearse, of Haskeui, who is engaged in obtaining specimens to supplement the series, told us that he received the skin of the bird when quite fresh, and that it was shot in company with a flock of the common Roller (*Coracias garrula*). The Indian Roller is already known to occur on the Persian Gulf. Sclater has examined specimens obtained at Bunder Abbas by Doria in 1862, now in the Civic Museum of Genoa; and Mr. Blanford, we believe, likewise met with it in Southern Persia; so that its occasional occurrence in Asia Minor is not very surprising. *Halcyon smyrnensis* has, we know, a somewhat similar range." It probably occurs more frequently in Asia Minor; for Mr. Danford says, in his notes on the ornithology of Asia Minor (Ibis, 1878, p. 7), that it was "once seen on the level country at the base of Aladagh, between Giaourkeui and Bereketlii." Mr. Blanford writes (E. Persia, ii. p. 126) that "the Indian Roller inhabits somewhat sparingly the countries of Southern Persia and Balúchistán which are below the level of about 3000 feet above the sea, its range in these countries being nearly the same as that of the date-palm. De Filippi, on the authority of the Marchese Doria, gives as its habitat, in Persia, 'beyond Isfahán in the region of the palms;' but no palms are met with so far north as Isfahán, except on the edge of the salt desert north of Yezd, and I think that beyond (*i. e.* south of) Shiraz would more accurately represent the range of the bird. It extends west as far as the neighbourhood of Bushire. Whether it is found at the extreme end of the Persian Gulf, or on the south-west coast of the Gulf in Arabia, I cannot say. On the few occasions on which I saw this Roller in Balúchistán, it was on date-palms. It is of course non-migratory, the region which it inhabits being sufficiently warm to furnish a supply of insect food at all seasons." To this Major St. John adds that it is "non-migratory, and found only in the palm groves on the coasts and in the neighbouring valleys. About Dálíkí and Khisht both species of Roller are abundant in spring and summer, the European bird spending its winter in Arabia, while *Coracias indica* remains at home. In these places I have shot a great many specimens in the hope of finding a hybrid, but without success." According to Dr. Jerdon (B. of India, i. p. 215), this Roller "is distributed throughout the whole of India, from Ceylon and Cape Comorin to the base of the Himalayas; towards the north-east of our limits it begins to disappear, and is replaced by *Coracias affinis*; and in the extreme north-west its place is taken by *Coracias garrula* of Europe and Western Asia. Adams asserts that it is also found in Ladakh and Tibet; and he ignores the existence of *Coracias garrula* in the north-west." Speaking of its range in Ceylon, Mr. Holdsworth writes (P. Z. S. 1872, p. 423) as follows;—"This bird, although undoubtedly locally common in the north of Ceylon, has never come under my notice in the jungly district of Aripo, nor have I seen it in the south of the island. In the country between Colombo and Kandy, however, I have frequently met with it."

In habits this bird closely resembles our common European Roller. According to Dr. Jerdon (*l. c.*) "it frequents alike open jungles, groves, avenues, gardens, clumps of trees in the open country, and, except in thick forest, is to be found everywhere, and is sure to be met with about every village. It generally takes its perch on the top, or outermost branch, of some high tree; and on spying an insect on the ground, which it can do at a very great distance, it flies direct to the spot, seizes it, and returns to its perch to swallow it. A favourite perch of the Roller is a

bowrie pole, or some leafless tree, whence it can see well all round; also old buildings, a haystack, or other elevated spot; sometimes a low bush, or a heap of earth, or of stones. When seated it puffs out the feathers of its head and neck. I have, on several occasions, seen one pursue an insect in the air for some distance; and when the winged termites issue from their nest after rain, the Roller, like almost every other bird, catches them on the wing. It flies in general with a slow, but continued, flapping of its wings, not unlike the Crow, though more buoyant; but it has the habit of occasionally making sudden darts in the air in all directions. Its food is chiefly large insects, grasshoppers, crickets, *Mantidæ*, and even beetles; occasionally a small fieldmouse or shrew. It is often caught by a contrivance called the *chou-gaddi*. This consists of two thin pieces of cane or bamboo, bent down at right angles to each other to form a semicircle, and tied in the centre. To the middle of this the bait is tied, usually a mole cricket, sometimes a small fieldmouse (*Mus lepidus*); the bait is just allowed tether enough to move about in a small circle. The cane is previously smeared with bird-lime, and it is placed on the ground not far from the tree where the bird is perched. On spying the insect moving about, down swoops the Roller, seizes the bait, and on raising its wings to start back, one or both are certain to be caught by the viscid bird-lime. By means of this very simple contrivance many birds that descend to the ground to capture insects are taken, such as the King-Crows (*Dicruri*), common Shrikes, some Thrushes, Flycatchers, and even the large Kingfishers (*Halcyon*).

"The Roller has a very harsh grating cry or scream, which it always utters when disturbed, and often at other times also. Mr. Blyth states that in spring the male has a pleasing dissyllabic cry, repeated at intervals: this I cannot say I have heard. As previously mentioned, it is often selected as the quarry for the Turumti Falcon (*Falco chicquera*); and its extraordinary evolutions to escape the Hawk and its harsh cries are noticed under the description of that Falcon." Colonel Irby states that it performs the same aerial antics as *Coracias garrula*, but is much more noisy, and very annoying during the breeding-season.

Like the common Roller, the Indian Roller nests in holes of trees, nesting in Southern India, according to Mr. Morgan, in March, and in Oudh and Kumaon, according to Colonel Irby, in May and June; and the latter gentleman says that it makes its nest in holes in the thatch of bungalows as well as in holes in trees. The number of eggs appears to vary from two to four, or sometimes five. I am indebted to Mr. Rhodes W. Morgan for several eggs obtained by him in Southern India, which are glossy white, and very closely resemble the eggs of *Coracias garrulus*, but, if any thing, run a trifle less in average size. Mr. A. O. Hume writes (Nests and Eggs of Ind. Birds, p. 104) that these birds "build in holes in trees, in old walls, in roofs, or under the eaves of bungalows; they sometimes make a good deal of a nest of feathers, grass, &c., especially where the site they choose is not well closed in; but where they build in a small-mouthed hole there is usually a very scanty lining. I have found a nest in a large niche in an old wall in which the birds had contracted the entrance with masses of tow, vegetable fibre, and old rags; but this is quite exceptional; and, again, I have taken the eggs from a hole in a Siris tree, in which there was not the smallest lining, beyond a few fragments of decayed wood. I have never found more than five eggs in any nest; and four I take to be the normal number."

The specimen figured is an adult male from Southern India in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.*, *c*, *juv.* Southern India.

Family MEROPIDÆ.

Genus MEROPS.

Apiaster apud Brisson, Orn. iv. p. 532 (1760).
Merops, Linnæus, Syst. Nat. i. p. 182 (1766).
Blepharomerops apud Reichenbach, Handb. d. Spec. Orn. p. 82 (1851).
Phlothrus apud Reichenbach, Merop. p. 66 (1852).

Like the Rollers, to which they are allied, the Bee-eaters form a very richly coloured group of birds, which inhabit the warmer portions of the Old World, being found in the southern portion of the Palæarctic Region, and in the Ethiopian and Oriental Regions, three species being found in the Western Palæarctic Region.

They are gregarious, and frequent river-banks, gardens, and open places, feeding on insects of various kinds, which they chiefly capture on the wing. Their flight is swift, resembling that of the Swallow; and their cry is harsh and monotonous. They breed in colonies, nesting in holes in a bank or cliff, usually near, but sometimes tolerably far away from water, and excavate the holes themselves. Their eggs, which are roundish, pure white in colour, and glossy in texture, are deposited in a chamber at the end of the nest-hole, no nest being made.

Merops apiaster, the type of the genus, has the bill longer than the head, arched, pentagonal at the base, then four-sided, compressed, and tapering to a point; gape-line curved; nostrils roundish, nasal membrane short; wings, long, pointed, the first quill very small, pointed, the second longest; tail long, the two central rectrices elongated and pointed; feet very small and feeble, the lower part of the tibia bare, the tarsus indistinctly scutellate; toes short, slender, the anterior parallel and partly united; claws slender, curved, compressed, acute.



J.G.Keulemans lith.

Hanhart imp

COMMON BEE-EATER.

MEROPS APIASTER.

MEROPS APIASTER.

(COMMON BEE-EATER.)

Apiaster, Briss. Orn. iv. p. 532 (1760).
Apiaster icterocephalos, Briss. Orn. iv. p. 537 (1760).
Merops apiaster, Linn. Syst. Nat. i. p. 182 (1766).
Le Guêpier, Montb. Hist. Nat. Ois. vi. p. 480, pl. xxiii. (1779).
Guêpier à tête jaune, Mont. Hist. Nat. Ois. vi. p. 510 (1779).
Grand guêpier vert et bleu à gorge jaune, Montb. Hist. Nat. Ois. vi. p. 502 (1779).
Merops congener, Gmel. Syst. Nat. i. p. 461 (1788).
Merops chrysocephalus, Gmel. Syst. Nat. i. p. 463 (1788).
Merops hungariæ, C. L. Brehm, Vög. Deutschl. p. 146 (1831).
Merops elegans, C. L. Brehm, Vogelfang, p. 50 (1855).

Guêpier vulgaire, French; *Abelharuco*, *Melharuco*, Portuguese; *Abejaruco*, Spanish; *Gruccione*, Italian; *Kirt-el-nahal*, Maltese; *Schegagh*, Arabic; *el Leeamoon*, Moorish; *europäischer Bienenfresser*, German; *Biæder*, Danish; *Biätare*, Swedish; *Tschur*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 938; Werner, Atlas, *Alcyons*, pl. 1; Kjærb. Orn. Dan. taf. 13; Frisch, Vög. Deutschl. taf. 121, 122; Fritsch, Vög. Eur. taf. 14. fig. 1; Naumann, Vög. Deutschl. taf. 143; Sundevall, Svensk. Fogl. pl. 70. fig. 1; Gould, B. of Eur. pl. 59; id. B. of G. Brit. ii. pl. 9; Bettoni, Ucc. Lomb. pl. 104.

♂ *ad.* suprà saturatè castaneus, scapularibus et dorso postico toto dilutioribus, fulvescentibus: fronte et superciliis albis viridi-cyaneo lavatis: regione paroticâ et torque gutturali nigris: tectricibus alarum superioribus ferè castaneis, minimis saturatè viridibus: primariis viridibus, scapis brunneis, pogonio interno versus apicem nigricante: secundariis basin versus castaneis, apice nigricantibus, dorsalibus viridibus: caudâ suprà viridi, subtùs griseâ, scapis rufo-brunneis: gulâ genisque lætè flavis: corpore subtùs cyaneo-viridi, subalaribus fulvescentibus: rostro et pedibus nigris: iride rubrâ.

Adult Male (Barcelona, 8th May). Head, neck, and upper part of the back deep chestnut, gradually lessening in tone towards the scapulars, which are cream-coloured; a frontal band extending backwards over the eye white, with a slight blue-greenish lustre; entire back pale chestnut, much lighter on the rump; upper tail-coverts very pale green; wing-coverts chestnut, some of the least coverts and the primary-coverts dull greenish; quills above glossy green, greyish black underneath, most of the inner web cream-coloured; the secondaries for the most part chestnut like the wing-coverts, tipped (as are also the primaries) with deep black, the innermost secondaries much washed with dull green, those nearest the back being entirely of this colour; tail grey, entirely glossed on the upper surface with green, the two middle feathers elongated, tinged with olive; a line passing below the eye and enclosing the ear-coverts, and another across the lower part of the throat, jet-black; entire throat and cheeks rich golden

yellow, distinctly washed with glossy green near the angle of the mouth; rest of the under surface of the body glossy greenish cobalt, becoming paler on the abdomen and under tail-coverts; under wing-coverts buff; bill black; feet pale reddish brown; iris carmine-red. Total length about 10 inches, culmen 1·6, wing 6·1, tail 5·0, tarsus 0·4.

Female. Resembles the male, but is rather smaller, and duller in colour.

Young. Resembles the adult, but is altogether much paler and duller in colour.

Obs. In measurements the variation is, on the whole, not much; but examples from Africa appear to run somewhat smaller than those from Europe. The variation in size of those I have examined is—culmen 1·5–1·6, wing 5·6–6·1, tail 4·4–5·0, tarsus 0·4.

Generally distributed in Southern Europe during the summer season, the Bee-eater is only known as a somewhat rare straggler to the central and northern portions; but it ranges throughout Africa down to the Cape colony, and is found in Western Asia.

In Great Britain it has occurred on several occasions, but only as a straggler. The first recorded instance of its occurrence appears to have been that of one shot in June 1794, out of a flock of about twenty, near Mattishall, in Norfolk, by the Rev. George Smith, particulars of which were communicated to the Linnean Society by Sir James E. Smith, the President of that Society. Since then there have been numerous instances of its occurrence. Yarrell writes (Brit. B. p. 224), the bird he figured "was shot in May 1827, by the bailiff of Robert Holford, Esq., at Kingsgate, in the Isle of Thanet. This specimen is in the possession of R. B. Hale, Esq., M.P., of Alderley, near Wotton-under-Edge, in Gloucestershire, who obligingly allowed me the use of it for this work. One example of the Bee-eater is recorded by Rusticus to have been shot in a garden in the town of Godalming, in Surrey, a few years back; and a specimen was shot in the autumn of 1839, at Christchurch, in Hampshire, for the knowledge of which I am indebted to the kindness of my friend T. C. Heysham, Esq., of Carlisle. In Dorsetshire a Bee-eater was shot at Chidcock, and is now preserved in the Bridport Museum. Three specimens are recorded by Dr. Edward Moore as having been killed in Devonshire. In Cornwall, according to Mr. Couch, four specimens occurred in the parish of Madern in 1807; and a flock of twelve visited the neighbourhood of Helston in 1828, of which eleven were shot. The only instance I am aware of in which the Bee-eater has occurred in Ireland, is that recorded by Mr. Vigors in the 'Zoological Journal' as having been killed on the sea-shore near Wexford, in the winter of 1820, and preserved in the collection of James Tardy, Esq., of Ranelagh, near Dublin. Four or five examples of this bird have been obtained in the counties of Suffolk and Norfolk. One killed at Beccles, in the spring of 1825, is in the possession of the widow of the Rev. H. F. Howman. Among the more recent captures of this species are one in Sussex, in 1850, two in Norfolk, and one in Essex, in 1854, and one at Freshwater, in the Isle of Wight, in June 1855. Mr. Thompson, of Belfast, has referred to one that was shot in October 1832, in the Mull of Galloway." Mr. Stevenson refers to the above-mentioned record of the capture of one in Norfolk in 1794, and writes (B. of Norf. p. 313) as follows:—"The next recorded instance is probably the one mentioned by Messrs. Sheppard and Whitear as shot near Yarmouth, which came into the possession of Mr. Seaman, of Ipswich; and in the Museum collection (No. 156) is an immature bird killed

many years back at Gisleham; and in his 'Fauna of Norfolk,' published in 1845, Mr. Lubbock speaks of another as killed lately at Yarmouth. From that time, however, it does not appear to have been noticed again in this county until the 3rd of June 1854, when a pair were shot at the same time on the Norwich river, near Coldham Hall. These beautiful birds, now in my possession, were shown to me in the flesh; and for brilliancy of plumage I never saw finer specimens. Both were in good condition; and on dissecting the stomach of the female I found the remains of no less than five large insects of the Hymenopterous order, apparently a species of wild or humble bee; the stomach of the male also contained similar débris, but less distinguishable."

The present species has also been met with in Scotland. Mr. Robert Gray says (B. of W. of Scotl. p. 203), "I have seen specimens which were killed in Forfarshire and Aberdeenshire. A fine specimen was exhibited at a meeting of the Natural-History Society of Glasgow in 1852 by my friend Mr. Thomas Ferguson; it had been shot a short time previously on his brother's estate near Peterhead. The Bee-eater has likewise been observed in Wigtownshire, a specimen having been procured in Logan Garden, parish of Kirkmaiden, in the summer of 1832; but the species, in Scotland, can only be ranked as a rare and accidental straggler. Mr. Edward has informed me that a specimen was obtained some years ago in Banffshire." He further adds (*op. cit.* p. 513) that he was informed by Mr. J. Bell, of Paisley, that one was seen on the banks of the river Black Cart, in August 1869, by Mr. Scott, keeper on the Walkinshaw estate.

In Norway, Mr. Collett informs me, the present species is not known to have occurred; but it has been several times obtained in Sweden. The first on record as having been obtained there was, Professor Sundevall says, shot in June 1816, at Nedraby, a Swedish mile north of Ystad, and was in company with another, which was not secured. One was obtained in August 1829, in Högsäter parish, Dalsland, and presented to the Stockholm Museum by the Rev. O. Fryxell. A small flock of six individuals appeared on the 19th May 1858 at Täfvelsås, near Wexiö, and remained for three days in a garden. Two of these were shot by the Rev. N. Wieslander, who presented one to the Stockholm and the other to the Lund Museum. One was obtained by Mr. Knoblock, a little south of Muonioniska, in Lapland, on the 3rd June 1865; but it does not seem to have occurred in Finland, and it is rare in Northern Russia, though common in the south. Mr. Sabanäeff says that it breeds, though rarely, in the Voronege Government, and is said to occur near Moscow. Bogdanoff met with it as far as Samara; and Pallas says that it ranges up to the mouth of the Kama river. Eversmann says (J. f. O. 1853, p. 291) that on the Ural river it ranges northwards to Orenburg and the Lower Samara, where the Ik flows into that river. On the steppes of the Lower Volga and the Ural it is very common. Mr. L. Taczanowski says that it is of accidental and very rare occurrence in Poland, and he only knows of one instance of its capture in the Lublin Government. It is, however, more frequently seen in the Ukraine and Podolia. According to Borggreve it has been met with in various parts of North Germany, most commonly in Silesia, where it has even been found breeding near Ohlau. It has been met with in Westphalia and Posen; and Tobias states that it occurs at Hirschberg almost every summer. In Denmark and the Danish provinces it is a very rare straggler. Mr. Collin says (Skand. Fugl. p. 131) that it has been met with in Holstein; two were shot on the 5th June 1840 at Gjorslev, in Seeland; a lady caught two at Klitterne, near Svineklöer; Horne-

mann records its occurrence in Fyen; and Mr. Steenberg received one in spirits which had been shot on Anholt in May 1853. It has been obtained on Heligoland; but it does not appear to visit Holland or Belgium, though it visits Northern France. Messrs. Degland and Gerbe state that a flock of fifteen or twenty established themselves, early in July 1840, at Pont Remy, near Abbeville, in a crag already perforated by Sand-Martins, and there M. Baillon obtained a sitting female and her eggs. With this exception its occurrences are principally confined to the southern districts, some pairs nesting in Provence every year, although the majority are birds of passage. M. Adrien Lacroix says that it occurs accidentally on passage, from time to time, in the Haute-Garonne. Two were obtained in May 1868 near Portet, about ten kilomètres south of Toulouse; and the following year a fine male was shot in April at Saint-Simon, eight kilomètres from Toulouse, and was in company with five or six others. Two have, he says, to his knowledge, been obtained in the Hautes-Pyrénées; he received one from Castres in May 1869; and it occurs every year, on passage, more or less numerously, in the Pyrénées orientales.

In Portugal the Bee-eater is very common throughout the summer; and in Spain it is exceedingly numerous. I met with it commonly in Catalonia in May; and Colonel Irby writes (Orn. Str. Gibr. p. 65) as follows:—"This bird did not appear to me to be quite so common in Morocco at the end of April as on the Spanish side of the Straits, where during April, May, June, and July it is one of the most conspicuous birds in the country; at that season Andalucia without Bee-eaters would be like London without Sparrows. Everywhere they are to be seen; and their single note, *teerrp*, heard continually repeated, magnifies their numbers in imagination. Occasionally they venture into the centre of towns when on passage, hovering round the orange-trees and flowers in some patio or garden. Crossing the Straits for the most part in the early part of the day, flight follows flight for hours in succession. When passing at Gibraltar they sometimes skim low down to settle for a moment on a bush or a tree, but generally go straight on, often almost out of sight; but their cry always betrays their presence in the air. My dates of the first arrivals noticed are the 7th of April 1868, 4th of April 1869, 1st April 1870, 29th of March 1871, 26th March 1872, 28th of March 1874. They were observed passing in great numbers from the 10th to the 14th of April in three consecutive years, the greatest quantity arriving on the 10th; so, in Spanish fashion, I christened that date 'St. Bee-eater's day.' The latest flight I ever saw going north was on the 7th of May. Having remained at Gibraltar once only during July and August, I had but that opportunity of watching the return migration, which appeared during the last week in July and also on the 10th and 12th of August, the last being noticed on the 29th of that month, all, with few exceptions, being heard passing at night. The first arrivals, as is the case with all migrants, are those which remain to breed in the immediate neighbourhood."

This species is recorded by Von Homeyer from the Balearic Islands; and it is tolerably common all along the coasts of the Mediterranean, but rarer further inland. In Savoy it is only of rare and irregular appearance, being principally met with along the valleys of the Rhône and the Isère; but in Italy, Sicily, and Sardinia it breeds in many parts, arriving late in April or early in May.

Mr. A. B. Brooke says (Ibis, 1873, p. 236) that in Sardinia, "from about the 17th of April, large flocks began to appear, flying very high in a northerly direction. The first arrivals seemed

all to pass on further north; and it was quite a week later before they began to settle in the south of the island. On their migration they keep up their soft musical note, which can be heard a long distance off. Large numbers breed in the island."

Mr. C. A. Wright states (Ibis, 1864, p. 73), in Malta "it arrives in April and May in large flocks; and its peculiar gurgling note may be heard at a long distance. Towards evening they settle to roost on the carob-trees, and nestle so close to one another that I have known as many as twenty or thirty to be brought down at one shot. Three were seen in 1861 as late as the 7th June. In Gozo they have been observed to lay their eggs in the sand. They reappear in autumn." In Southern Germany it occurs, as a rule, only as an accidental straggler. Dr. Fritsch says that it is a rare bird in Bohemia; but, according to Voboril, it is said to have on one occasion nested near Prague. The late Mr. E. Seidensacher informed me that one was obtained near Reichenegg on the 21st May 1864, but that near Marburg it more frequently occurs and is even seen in small flocks.

Of it in Transylvania Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 300), "Local, but, where occurring, found in considerable numbers. Herr Klir saw many during former visits at Bogát, on the Maros, where they were breeding in the river-banks. They seem, however, to be of a wandering disposition; for, although we looked for them at this breeding-place on two occasions, we did not see a single bird, but were always told that they had been there a day or two before. The old nesting-holes which we examined in the low earth-banks of the river were in some instances completely line with elytra of beetles. Herr Csáto says that in 1850 a great flock appeared at Nagy-oklos, in the Strell valley; and by Bieltz and others Kleinschelken, Birthälen, Nagy-Enyed, Szásváros, &c. are given as localities."

It is common during the breeding-season along the Danube, and breeds in colonies in the banks on many of the southern portions of that river. In Southern Russia and Turkey it is exceedingly numerous during the summer; and Dr. Krüper says that it is a common bird throughout Greece, Macedonia, and Asia Minor, where it arrives early in April, and commences breeding late in May or early in June. He took fresh eggs on the 26th May and the 10th of June in Acarnania, and the 23rd May in Ionia, and incubated eggs on the 8th June on the Isthmus. Eight eggs is the number usually deposited. As soon as the young birds are full-grown they are found in August in flocks on the plains, and leave altogether in September.

Lord Lilford writes (Ibis, 1860, p. 235), "the Bee-eater arrives in Corfu and Epirus in great numbers in April, and breeds in the latter country on the banks of the Kataito river, near Mursyah, and many other similar localities. In all the holes that we examined, the eggs were laid on the bare sand, without any attempt at a nest. I several times observed three, and once or twice four birds fly from the same hole. These birds leave the country as soon as the young are able to fly. I have never seen them later than the beginning of August. I observed also, in August 1858, on the banks of the Guadalquivir, near San Juan de Alfarache, where there is a large colony of this species, that, although the banks were mined in every direction, and exhibited signs of recent occupation, not a Bee-eater was to be seen."

In Asia Minor it is, as in Greece, very common in all suitable localities; and in Palestine, Canon Tristram writes (Ibis, 1866, p. 83), "though far more numerous in individuals than the Roller, it is less universally distributed, living, however, in large societies in every part of the

country. Unlike its smaller congener *Merops viridis*, it does not frequently perch, but remains for hours on the wing, skimming, Swallow-like, up and down a nullah or wady, or systematically ranging and quartering a barley-plain in pursuit of insects on the wing. Seen athwart the sunbeams as they pass overhead, their colour has the appearance of burnished copper. They feed as well as breed in colonies, preferring low banks to the steeper declivities, and seeming to rely for protection against lizards and other enemies on the structure and turnings of their dwellings rather than on their position. I have taken the eggs from a nest in the side of a mere low sand-mound on the plain, out of which I startled the bird by riding over its hole." In Africa the Bee-eater is widely distributed, being found from the shores of the Mediterranean to the Cape colony. Von Heuglin says (Orn. N.O.-Afr. i. p. 197) that it is common throughout North-east Africa on passage from the end of March to the beginning of May, and again from August to October, usually in flocks, but not so numerous as *Merops persicus*; and he believes that it breeds in Central Egypt and Arabia Petræa. Captain Shelley says that it arrives in Egypt about the 10th of April, and is then plentifully distributed, but is not quite so abundant as *Merops persicus*. The greater number do not remain to breed, but pass northwards in May, returning in August. In North-west Africa it is also common, and is recorded from Algeria and Morocco as abundant, arriving in the latter country, Mr. C. F. Tyrwhitt-Drake says, early in April. On the West-African coast it has been observed in most parts which collectors have visited down to the Cape; and it is also found on the Canaries and Madeira. Vernon Harcourt records it from the latter; and, according to Dr. Bolle (J. f. O. 1857, p. 324), it frequently visits Fuerteventura in large flocks in winter, and is not unfrequently seen on Canaria. A considerable number are said to have bred at Arguineguin several years in succession. I have seen specimens from Senegambia; and Mr. Andersson says that it is very common in Ondonga during the rainy season, when it is also not uncommon in Damara Land proper; but he did not think that it was abundant in Great Namaqua Land. Captain Shelley met with a flock of this species near Durban early in April; and Mr. E. L. Layard says that during the period of its visitation it extends all over the Cape colony. He generally found it arrive about August, and adds that it breeds in the neighbourhood of Nel's Poort.

In Asia the Bee-eater does not range far to the eastward. Dr. Severtzoff says that it breeds commonly in Turkestan; and Mr. Blanford writes (E. Pers. ii. p. 122) of it, "a summer migrant in Persia, and during the warm months it abounds throughout the islands. I met with it first in Baluchistan on the 9th of April; but there, as in Sind, it is, I suspect, only a bird of passage, and its breeding-quarters are further north; but large numbers undoubtedly remain during the summer, and breed on the Persian highlands. The same remark applies to *Merops persicus* and *Coracias garrula*, none of these species being found in India in the winter, although they traverse Baluchistan, Sind, and occasionally North-western India in the spring and autumn; so that it is probable that all of them pass the colder months of the year in Arabia or Africa, and their line of migration crosses at right angles that of such species as *Euspiza melanocephala* and *Coturnix communis*, which resort to India in the winter, and breed in the Persian highlands." Dr. Jerdon says that it was observed by Dr. Adams in great numbers in the valley of Cashmere, extending into the plains of the Punjab, and is very abundant at Peshawar. He further adds (Ibis, 1872, p. 3) that he did not find it so generally spread in Cashmere as he expected, but he

saw one immense flock on the Wullur lake in the month of August, evidently about to migrate. According to Pallas it is found in Asiatic Russia only as far east as the Irtish river.

The Bee-eater is certainly one of the most brilliantly coloured and conspicuous of our European birds; and in the rich sunshine of the south there are few more beautiful sights than a flock of these birds hawking after insects. I first saw it alive in Southern Spain, but was too early to find it breeding, and have never been able to take its eggs. Those I saw had just arrived, and were hawking about in pursuit of insects, sometimes resting on the telegraph-wires which passed close to where they were. In their mode of flight they reminded me a good deal of the Swallow, and were catching insects on the wing like that bird. They feed on insects of various kinds, such as bees, wasps, grasshoppers, locusts, and beetles of various kinds, which are chiefly captured on the wing, but are also picked off trees, bushes, or plants. To the beekeeper it is an intolerable nuisance; for one or two of these birds will sometimes watch the entrance to a hive, and almost decimate the bees as they pass and repass.

The present species breeds in colonies in holes in a bank or cliff usually overhanging a stream, but sometimes away from water; and five or eight pure white, glossy, roundish eggs are deposited on the soil in the chamber at the end of the hole. Mr. Osbert Salvin, who met with the Bee-eater breeding numerously in North Africa, writes (Ibis, 1859, p. 303) as follows:—

"The first time I observed this species was towards the end of April, at Kef Laks, where a flock, apparently just arrived, passed over my head. It is plentiful about Djendeli, and breeds, boring the hole for its nest, in banks of the river Chemora and the ditches that drain the lowland near the lake. There the soil is alluvial and soft, and the bird finds little difficulty in making its excavation. During our stay I took several nests, and latterly became an adept at knowing at once which holes were tenanted, and when and where to dig. A little circumspection is necessary at first; for not unfrequently the occupant of the hole is not a Bee-eater, but a toad or snake. The scratchings made by the bird's feet in passing in and out, and the absence of fresh earth beneath the orifice are generally sure indications of the excavation having been completed, and consequently of a strong probability that there are eggs within. The holes pierced by this bird usually consist of a horizontal passage about three or four feet long, the entrance being at various heights from the level ground. This passage, from a circular opening, is gradually enlarged horizontally till it arrives at a chamber about a foot in diameter, and domed over. In this chamber the eggs are frequently deposited. Should, however, none be found, it is necessary to feel all round the chamber; and in many instances another passage of about a foot long will be found communicating with a second chamber in all respects similar to the first, in which, if it exists, the eggs are placed. The bird makes no nest; but the floor of the chamber is strewn with the legs and wing-cases of Coleoptera in such abundance that a handful may be taken up at once. In most instances I caught one of the old birds in the chamber containing the eggs; while the hole was being enlarged it would, every now and then, attempt to escape. The eggs are laid early in June, and are usually six in number. The flight of the Bee-eater is somewhat like that of a Swallow (*Hirundo rustica*), though its movements are much slower; and it is frequently to be seen perched on a bush. Its cry is harsh and monotonous."

Mr. Andersson, writing on the habits of this bird as observed by him in Africa, says (B. of Damara Land, p. 60), "these Bee-eaters are observed during their annual migrations in small

flocks; but having arrived at their temporary destination they scatter somewhat over the country, though several may still be seen in close proximity. They seem to live chiefly on a species of red wasp, and sometimes seize their food on the wing like Swallows, though they more frequently watch for it from some elevated perch, whence they suddenly pounce upon any prey which may chance to come within their ken, returning invariably to the same spot, whether successful or not. When their capture proves to be a bee or other stinging insect, it is always seized across the body, when the bird, after giving it a sharp squeeze or two between the mandibles of the bill, quickly swallows it. I have seen lizards pursue exactly the same plan when catching hymenopterous insects. When on the wing this Bee-eater utters a pleasant, but rather subdued, warbling chirp." Colonel Irby also (*l. c.*) gives some interesting details respecting the nidification and habits of the present species as observed by him in Southern Spain, where it is very numerous. "Commencing their labours of excavation," he writes, "almost immediately they arrive, the earliest eggs that I know of were taken on the 29th of April; but usually they do not lay till about the second week in May, often not so soon. In some places they nest in large colonies; in others there are perhaps two or three holes. When there are no river-banks or barrancos in which to bore holes, they tunnel down into the ground, where the soil is suitable, in a vertical direction, generally on some slightly elevated mound.

"The shafts to these nests are not usually so long as those in banks of rivers, which sometimes reach to a distance of eight or nine feet in all; the end is enlarged into a round sort of chamber, on the bare soil of which the usual four or five shining white eggs are placed; after a little they become discoloured from the castings of the old birds, the nest being, as it were, lined with the wings and undigested parts of bees and wasps. Vast numbers of eggs and young must be annually destroyed by snakes and lizards: the latter are often seen sunning themselves at the entrance of a hole among a colony of Bee-eaters; and frequently have I avenged the birds by treating the yellow reptile to a charge of shot. The bills of the Bee-eaters, after boring out their habitations, are sometimes worn away to less than half their usual length; but as newly arrived birds never have these stumpy bills, it is evident that they grow again to their original length. It has often been a source of wonder to me how they have the strength to make these long tunnels; the amount of exertion must be enormous; but when one considers the holes of the Sand-Martin, it is not so surprising after all.

"During my stay at Gibraltar, Bee-eaters decreased very much in the neighbourhood, being continually shot, on account of their bright plumage, to put in ladies' hats. Owing to this sad fashion, I saw no less than seven hundred skins, all shot at Tangier in the spring of 1874, which were consigned by Olcese to some dealer in London. However, the enormous injury these birds do to the peasants who keep bees fully merits any amount of punishment; but at the same time they destroy quantities of wasps. After being fired at once or twice they become very wary and shy at the breeding-places; and the best way to shoot them is to hide near the *colmenares* or groups of *corchos* or cork bee-hives, which in Spain are placed in rows, sometimes to the number of seventy or eighty together; and it is no unusual thing to see as many Bee-eaters wheeling round and swooping down, even seizing the bees at the very entrance of their hives.

"Their early departure in August is to be accounted for by the simple fact that bees cease to work when there are no flowers; and by that time all vegetation is scorched up."

As above stated, the eggs of this bird are pure white in colour, glossy in texture of shell, and roundish in shape, in general character much resembling eggs of the common Kingfisher. Specimens in my collection average in size about $1\frac{1}{40}$ by $\frac{36}{40}$ inch.

The specimen figured is an adult male procured by myself at Barcelona, and is the bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, *b*, ♂. Barcelona, Spain, May 8th, 1866 (*H. E. D.*). *c*, ♂. Seville, Spain, May 5th, 1868 (*H. Saunders*). *d*, ♂. Casa Vieja, Spain, April 17th, 1874. *e*, ♀. Casa Vieja, May 6th, 1874 (*Colonel Irby*). *f*. Crimea (*Whitely*). *g*. Caucasus, June 19th, 1871 (*Schmidt*). *h*, ♂. Volga, May 1865 (*Möschler*). *i*, *k*, ♂ ♀. Sarepta, Volga (*Dr. Stader*). *l*, ♂. Egypt (*S. Stafford Allen*). *m*, ♀. Saconda, Abyssinia, April 21st, 1868 (*Jesse*). *n*. Damara Land (*Andersson*). *o*, ♀. Shiraz, Persia (*W. T. Blanford*). *p*, *q*. Cashmere (*Jerdon*).

E Mus. E. Hargitt.

a, ♂, *b*, ♀. Seville, Spain, May 1869 (*H. Saunders*). *c*, ♂. Malaga, Spain, May 21st, 1871 (*H. S.*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Near Seville, April 23rd and May 2nd, 1868 (*H. S.*). *c*, *d*, ♂, *e*, *f*, ♀. Malaga, Spain, April and May (*H. S.*).



J.G.Keulemans lith

Hanhart imp

BLUE-CHEEKED BEE-EATER.

MEROPS PERSICUS.

MEROPS PERSICUS.

(BLUE-CHEEKED BEE-EATER.)

Merops persica, Pallas, Reise Russ. Reichs, ii. Anh. p. 708 (1773).
Merops ægyptius, Forsk. Descr. Animal. Aves, p. 2 (1775).
Le Guêpier savigny, Levaill. Hist. Nat. Guêp. p. 30 (1807).
Le Guêpier rousse-gorge, Levaill. op. cit. p. 52 (1807).
Le Guêpier rousse-tête ou *Le Guêpier Bonelli*, Levaill. op. cit. p. 57 (1807).
Merops longicauda, Vieill. Nouv. Dict. xiv. p. 15 (1817, ex Levaill.).
Merops ruficollis, Vieill. tom. cit. p. 22 (1817, ex Levaill.).
? *Merops ruficapillus*, Vieill. tom. cit. p. 23 (1817, ex Levaill.).
Merops superciliosus, Vieill. tom. cit. p. 20 (1817, nec Linn.).
Merops savignyi, Audouin, Expl. Somm. Pl. Hist. Nat. de l'Egypte (1825, ex Levaill.).
Merops savignii, Cuv. Règne Anim. 2nd ed. i. p. 442 (1829).
Blepharomerops savignyi (Aud.), Reichenb. Handb. Spec. Orn. p. 82 (1851).
Blepharomerops ægyptius (Forsk.), Reichenb. ut suprà (1851).
Merops chrysocercus, Cab. Mus. Hein. ii. p. 139 (1859–60).

Guêpier d'Égypte, French; *Gruccione forestiero*, Italian.

Figuræ notabiles.

Levaill. Hist. Nat. Guêp. pls. 6, 6 bis, 16, & 19; Savigny, Hist. Nat. Egypte, pl. 4. fig. 3; Bree, B. of Eur. iii. pl. to p. 162; Shelley, B. of Egypt, pl. vii. fig. 1.

Ad. suprà lætè psittacino-viridis: fronte albidâ, postice cærulescente: superciliis et striâ suboculari albis, cærulescenti marginatis: tæniâ per oculum nigrâ: uropygio et supracaudalibus cærulescenti tinctis: mento flavo: gulâ saturatè rufâ: pectore et abdomine cærulescenti-viridibus: subalaribus pallidè ferrugineis: remigibus nigricanti apicatis: rectricibus duabus centralibus elongatis et nigricanti apicatis: rostro nigro: pedibus fuscis: iride coccineâ.

Juv. suprà saturatè cæruleo-viridis, plumis vix pallidiore marginatis: rectricibus centralibus vix elongatis: lineâ frontali nullâ, et superciliis indistinctis: mento pallidè flavo-cervino: gulâ sordidè cinnamomeo: corpore reliquo subtùs pallidè cæruleo-viridi, abdomine centrali albicante.

Adult Male (Egypt). Forehead white at the base of the bill, then blue; superciliary stripe turquoise-blue, being a continuation of the frontal line; entire upper parts deep parrot-green, becoming bluish green on the upper tail-coverts; the green on the wings and tail tinged with russet; quills tipped with black and on the inner web margined with sooty brown; a broad band passes from the gape through the eye to the ear, this band being margined below with white and then turquoise-blue; chin dark yellow, throat fox-red; rest of the underparts as the upper parts, deep parrot-green; under wing-coverts and under surface of the wing at the base pale rufous; under surface of the tail blackish grey; bill black;

legs dark brown; iris crimson. Total length about 11 inches, culmen 1·9, wing 6·25, tail 5·3, central rectrices extending 1·62 beyond the lateral ones, tarsus 0·5.

Adult Female. Resembles the male.

Young (Shiraz). Upper parts much darker than the adult, being dark blue-green, the feathers with rather lighter margins, central rectrices scarcely longer than the lateral ones; the frontal line wanting, and the superciliary one very faintly indicated; the black cheek-stripe margined below with bluish white; chin pale yellowish buff; throat dull light russet; rest of the underparts pale blue-green, fading almost to white on the centre of the abdomen.

Widely distributed in Africa, and ranging eastward into India, the Blue-cheeked Bee-eater is very rarely met with, and then only as an accidental straggler, in the countries north of the Mediterranean. According to Crespon two specimens were killed in May 1832 near the mouth of the Lez, in the department of Hérault; and M. Adrien Lacroix states (Cat. Ois. Pyr. Franç. p. 273) that one was obtained on the 3rd of May 1859, near La Nouvelle, in Aude, and he subsequently received one from Cette. In Italy it has been obtained at least on one occasion; for the Marquis Durazzo received a pair, shot near Genoa in 1834, and Malherbe records (Faun. Orn. Sicil. p. 141) the occurrence of one, a female, shot near Palermo, in Sicily, and says that he saw the specimen in question; but both Benoit and Doderlein doubt this occurrence. Mr. C. A. Wright states (Ibis, 1874, p. 237):—"One of these rare and adventitious wanderers to Europe was shot in Malta since the publication of my 'Fourth Appendix.' It was killed at the end of May 1871, at the Inquisitor's Palace, by F. Camilleri, barber of the Central Hospital, out of a flock; but whether of the same or of the common kind (*M. apiaster*) he could not say. He was first attracted by its note, which was different from any he had heard before. The specimen is in my collection. It is a male in spring plumage. It is the only Malta-killed specimen extant, as all trace is lost of the only other example I know of, said by Schembri to have been killed in September 1840." I do not find it recorded from elsewhere in Europe proper, except that Dr. Krüper says that in Greece it sometimes occurs in company with *Merops apiaster*. A small flock was seen on the 19th April 1874; and four individuals out of it were shot. It was only twice observed by Von Nordmann near Odessa, and is very rare in Southern Russia. I do not find that it occurs in Asia Minor; but it has been obtained near Beyrout in Syria, and is very rare in Palestine. Canon Tristram shot one in the Jordan valley in 1858, but did not meet with it on his second visit, though Mr. Cochrane, who accompanied him, fell in with a small flock near Hebron.

In North-east Africa it is very common, and is, Captain Shelley says, the most abundant of the Bee-eaters in April. It arrives, he adds, about a fortnight earlier than *M. apiaster*. Von Heuglin writes (Orn. N.O.-Afr. i. p. 199) respecting the present species as follows:—"In the latter days of March, and usually before *Merops apiaster* arrives, small flocks of this species appear on passage in Lower Egypt, and frequent fields, gardens, and fig-plantations on the edge of the desert, the dunes, or in meadows, and usually leave after a sojourn of a few days to return again in hundreds in June and July, when they often collect together several hundred in a flock, and are seen chiefly in the olive-gardens, and on tamarisks and acacias along the canals. In the

early morning they remain where they have roosted, utter their call-note in a low tone, and about nine o'clock collect in flocks and spread over the fields and in the villages, uttering loud cries. Their flight is Swallow-like but irregular, and one or two leave the flock and circle round catching insects, which are devoured either on the wing or when seated on a branch at the top of a tree. During the heat in the middle of the day they rest for a time; and I never saw a Bee-eater go to drink. In the evening they collect together and, uttering their note noisily, go to roost. In the summer they are very fat, and numbers are killed and eaten by the Italian and Greek gunners. Late in August one meets flocks of this Bee-eater on passage in Nubia, East Sudan, and Abyssinia; but they do not winter here, but migrate further in a southerly or south-westerly direction. On the 17th October, 1857, I found the *Avicennia*-thickets on some of the islands on the Somali coast covered with Bee-eaters and Rollers, which evidently came there after the flocks of locusts. Brehm surmised correctly that this species breeds in May in Central and Lower Egypt; for I shot a female at New Dongolah on the 19th May which had a fully formed egg in the ovary. Allen found a colony breeding at Damietta in April; and I also found one on some half-desert pasture-land at Dachschur in the same month. But Brehm is wrong in saying that all Bee-eaters (and he probably means *M. apiaster* in particular) migrate solely in company with *M. persicus*; for one finds separate flocks of the different species in the same locality, but I never saw them intermixed. Hartmann states that he observed *Merops persicus* in January near Golosaneh, in Egypt, whereas I never saw it between September and March in North-east Africa. In the autumn the plumage fades greatly and loses the rich green sheen; and the moult probably takes place in January and February."

It is found in North-western Africa, and has been observed in Algeria, though it seems to be somewhat rare there. Mr. J. H. Gurney, jun., writes (Ibis, 1871, p. 75) as follows:—"On the 21st of April I saw an Egyptian Bee-eater in one of the cemeteries of Gardaia, which proved to be of this species. I afterwards came upon a flock of them lying upon the large stones which are scattered about wherever there are no gardens. I saw them also on the walls, and on the fence-work upon the town wall; and returning I found the cemetery, where I had seen the first solitary bird, occupied by about a dozen. They were perfectly tame; and I thought I had never seen a more interesting sight than these sparkling birds as, one after the other, they rose into the air to hawk for insects, and, returning, perched upon a tombstone within a few yards, perhaps, of where I was standing. They have only one note; it is loud and rather harsh, like the common Bee-eater's. Their flight is slower, but even more gliding, with the wings very much raised, except when the birds are high in air, when they hold their wings more depressed. They almost lie upon stones and walls, as if unable to sit upright on account of their long tails and short legs."

It is found all along the west coast of Africa. Swainson records it from Senegambia; and examples from Senegal are in the Leyden Museum. Verreaux records it from Casamanze, Bissao, and the Gaboon; Monteiro from Benguela and Angola; specimens are in the Lisbon Museum from Loanda and Rio Quilo, in Angola; and I possess examples from Bissao, the Gambia, and Ondonga—that from this last locality collected by Mr. Andersson, who observed it near the Okavango river; and in his last collection he sent several specimens, obtained in Ondonga in November 1866. It is found also in the Cape colony. Mr. E. L. Layard writes

(B. of S. Afr. p. 69) that it was "found in Natal by Mr. Ayres. A single specimen was also forwarded to the Museum by T. B. Bayley, Esq., of Wynberg, having been shot by that gentleman on the Cape Flats. Mr. Dumbleton, of Wynberg, assures me that these birds periodically visit a circumscribed portion of the Cape Flats in considerable numbers. On February 15th, 1866, a specimen was sent to the Museum by Mr. Bishop, shot near Kuils River."

Mr. T. E. Buckley, who obtained it in the Matabili country, writes (Ibis, 1874, p. 363), "this species was only observed on one occasion, when it appeared to be migrating. On that day I saw several large flocks hawking about after flies, and occasionally settling on the small bushes. The note of all the Bee-eaters I have met with seems to be almost exactly the same."

According to Captain R. M. Sperling (Ibis, 1868, p. 289), it is pretty common at Mozambique, where he procured several specimens; and he was informed by Mr. Faulkner, one of the Livingstone search-expedition, that myriads nest on the banks of the Shiré river.

In Madagascar the present species does not occur, being replaced by *Merops superciliosus*, which differs from the present species in having a much more ferruginous brown tinge on the head and upper back, in almost lacking the blue on the streak above and below the eye and on the upper tail-coverts, and in having the central rectrices much longer and more gradually attenuated.

To the eastward the present species is found as far as India, beyond which it is replaced by *Merops philippinus*, Linn., which is easily recognizable by its blue tail. It is found in Southern Russia; but, according to Eversmann, it does not range further north than the district of Guriew, where it is rare. Dr. Severtzoff states that it breeds in Turkestan; and it occurs in Persia. Mr. Blanford writes (E. Pers. ii. p. 124), "I found *Merops persicus* in great abundance in the country north-west of Bampur, in Baluchistan, and in Narmashir, the Persian district traversed on the road from Bampur to Bam, in the second and third weeks of April 1872. The birds were evidently migrating; and all which were shot were in superb plumage. Hume remarks that large numbers are seen in Sind at particular seasons, probably in the same manner, when migrating, and the bird has been observed as far east as Aligurh. On the Persian highlands I seldom saw this species, *Merops apiaster* being very much more abundant; but a few miles from Tehrán, on the 22nd of August, I came upon a large scattered flock of *Merops persicus*, chiefly consisting of young birds. The place was a somewhat barren plain, with a few scattered shrubs and herbaceous plants; and the birds settled on the ground, occasionally flying up to pursue insects. They may have been migrating, or preparing to migrate. De Filippi obtained specimens at Miána and Nikbeg, between Kazvin and Tabriz; and Ménétriés saw it on the banks of the Kur, in the Transcaucasian provinces of Russia, a little north of the Persian frontier." It is found in Sindh; Captain Hutton speaks of it as arriving at Kandahar early in April, and leaving in the beginning of the autumn; and Captain Marshall states (Ibis, 1872, p. 203) that he obtained it in the Aligurh and Mynpoorie districts of the North-western Provinces of India which are situated in the flat alluvial plains of the valley of the Ganges, where it is numerous. Mr. R. M. Adam also states (Stray Feathers, ii. p. 466) that he found it plentiful about Sambhur in May 1874, and shot several. I may here remark that, according to Mr. Hancock (B. of North. and Durh. p. 28), a specimen of *Merops philippinus* was shot near the Snook, Seaton Carew, in August 1872, and is now in the possession of the Rev. T. M. Hicks, of Mewburn; but it appears

to me more probable that the specimen in question may have been one of the present species. I have, however, not had an opportunity of examining this specimen, and can therefore give no decided opinion on the subject.

In habits, note, and mode of nidification the present species assimilates closely with *Merops apiaster*, "which," Captain Shelley writes (B. of Egypt, p. 170), "it resembles in size, habits, and cry; yet the two species are never found in one flock. During the day they may generally be met with perched upon the telegraph-wires, or feeding among the herds of cattle. I once observed them, towards evening, alight in such immense numbers upon a sandbank that they made it look almost as green as meadow-land; they appear, however, generally to roost at night in the sont trees."

I possess eggs of this bird, which agree closely with those of *Merops apiaster*.

The specimens figured are an adult male from Egypt and a young female from Persia, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀. Egypt (*Captain Shelley*). *c*, ♂. Benisouef, Egypt, March 28th, 1868 (*Shelley*). *d*. Egypt (*Rogers*). *e*, ♂. Regan, Nurmanshir, S.E. Persia, April 18th, 1872 (*W. T. Blanford*). *f*, ♀ *juv.* Shiraz, Persia, summer of 1870 (*W. T. Blanford*). *g*. Bissao, Africa (*Verreaux*). *h*. River Gambia, (*Whitely*). *i*, *juv.* Ondonga, Ovampo, November 28th, 1866 (*Andersson*).

E Mus. G. E. Shelley.

a, ♀. Egypt, April 4th, 1868. *b*, ♀. Egypt, March 25th, 1870. *c*, *d*, ♂. Egypt, March 1871. *e*, *f*, ♂. Egypt, April 1st, 1871 (*G. E. S.*).

E Mus. Howard Saunders.

a. Egypt (*Rogers*). *b*. Egypt, March 25th (*Captain Shelley*).



J.G.Keulemans Lith.

M&N.Hanhart imp

LITTLE GREEN BEE-EATER.

MEROPS VIRIDIS.

MEROPS VIRIDIS.

(LITTLE GREEN BEE-EATER.)

The Indian Bee-eater, Edw. Nat. Hist. Birds, iv. p. 183, pl. 183 (1751).
Apiaster madagascariensis torquatus, Briss. Orn. iv. p. 549 (1760).
Apiaster bengalensis torquatus, Briss. tom. cit. p. 552 (1760).
Merops viridis, Linn. Syst. Nat. i. p. 180 (1766).
Merops orientalis, Lath. Ind. Orn. Suppl. p. xxxiii (1801).
Merops ægyptius, Licht. Verz. Doubl. p. 13 (1823, nec Forsk.).
Merops viridissimus, Swains. B. of W. Afr. ii. p. 82 (1837).
Merops indicus, Jerd. Madr. Journ. ser. 1, xi. p. 227 (1840).
Merops torquatus, Hodgs. in Gray's Zool. Misc. p. 82 (1844).
Merops ferrugeiceps, Hodgs. op. cit. p. 82 (1844).
Phlothrus viridissimus (Sw.), Reichenb. Merop. p. 66, pl. 445. figs. 3229, 3230 (1852).
Merops lamarcki, Sclat. in Jard. Contr. Orn. ii. p. 124 (1854, nec Cuv.).

Figuræ notabiles.

Edwards, *l. c.*; D'Aubenton, Pl. Enl. 740; Levaill. Guêp. pl. 10; Shelley, B. of Egypt, pl. vii. fig. 2.

Ad. suprà lætè psittacino-viridis, pileo et nuchâ vix rufescente aureo tinctis: dorso imo, uropygio et scapularibus cum secundariis intimis viridi-cyaneo lavatis: remigibus intùs viridi-cinnamomeis, primariis nigro-fumoso et secundariis nigro terminatis, secundariis intimis dorso concoloribus: caudâ sordidè viridi, plumis in pogonio interno cinnamomeo tinctis, rectricibus duabus centralibus valdè elongatis et angustatis: corpore subtùs lætè psittacino-viridi: tæniâ transoculari et fasciâ jugulari angustâ nigris: gulæ lateribus cæruleis, et gulâ centraliter vix cæruleo notatâ: abdomine cæruleo et viridi-cæruleo tincto: alis infrà pallidè fulvescentibus: rostro nigro: iride scarlatinâ: pedibus sordidè plumbeis.

Juv. vix sordidior et pallidior, gulâ magis viridi-flavâ et fasciâ jugulari angustiore.

Adult Male (Egypt). Upper parts brilliant green; crown and nape tinged with rufescent golden; lower back, rump, scapulars, and inner secondaries tinged with verdigris or blue-green; quills rufous on the inner webs, and strongly tinged with green on the outer webs, the primaries dusky at the tips, and the secondaries, except the innermost, broadly tipped with black; innermost secondaries like the back; tail dull green, the inner edge of the webs dusky rufescent, the two central feathers much elongated; underparts bright green; a black band through the eye, and a collar on the lower throat black; a line below the eye-band bright blue, and the throat and abdomen slightly tinged with blue and blue-green; under surface of the wings bright rufous; bill blackish; iris crimson; legs dull plumbeous. Total length about 11 inches, culmen 0·95, wing 3·65, lateral tail-feathers 2·95, central tail-feathers 5·35, tarsus 0·45.

Adult Female (Egypt). Resembles the male; but the throat and underparts are green, and the line of blue below the black eye-band is narrow.

Young. Rather duller and paler than the adult, the throat pale yellowish green, and the collar on the throat smaller and less distinct; the blue stripes on each side of the neck are wanting.

This brilliantly coloured and elegant species is only found just within the limits of the Western Palæarctic Region, being met with in that portion which extends into North-east Africa: it has also been obtained in Palestine; for Canon Tristram writes (Ibis, 1862, p. 278), it has been "shot in the valley of the Jordan; probably this is the western limit of this species, which has not, I believe, been hitherto noted as occurring in Syria." In North-east Africa it is common, and, Captain Shelley informs me, ranges northwards into the Palæarctic Region; and in Middle Egypt it is resident throughout the year. Mr. J. H. Gurney, jun., writes to me that when travelling up the Nile he met with it two days after leaving Cairo, and thence it was common up to Assouan; and Von Heuglin writes (Orn. N.O.-Afr. i. p. 203) that it is a resident in Middle Egypt, between 24° and 28° N. lat., and common along the Nile and its canals, where it breeds from February to April. In the autumn he observed it in Eastern Kordofan, and in the spring along the Gazelle River; and he believes that it breeds in the Bogos country. Mr. Blanford says that it is common near the coast of Abyssinia, especially in the mangroves on the shores of Annesley Bay. It has also been recorded from West Africa. A specimen from Barbary is in the Heine collection; it has been obtained in the Gaboon; and the specimen on which Swainson's name of *viridissimus* was based is said to have been obtained in Senegal.

To the eastward the present species is found as far as Burmah, and as far south as Ceylon. Mr. Blanford informs me that "in Persia it is now migratory, and is only found in the lowlands of Southern Persia and Baluchistan. All the specimens procured have a distinctly blue chin and throat, and in this respect agree with the Indian race (*M. torquatus*, Hodgs.), whilst the upper plumage resembles that of the African *M. viridissimus*, there being in no case the ferruginous tint on the head seen in many Indian specimens. As a rule Indian birds have a decidedly longer bill than those from Egypt; and in this respect all Persian and Baluchistan specimens agree with Egyptian." Mr. A. O. Hume writes (Stray Feathers, i. p. 167) that it is "pretty common all the year round in Upper Sindh; in Lower Sindh it appears comparatively rare. The Sindh specimens almost entirely lack the rufous tinge on the head; in fact, in coloration as in geographical position, they are at the opposite end of the scale to the Burmese birds, in which the rufous tinge on the cap is so conspicuous." Dr. Jerdon says (B. of India, i. p. 205) that it is found over the whole of India, extending to Arakan, the Indo-Chinese countries, and to Ceylon. It does not ascend mountains, to any height at least; and the specimen in the British Museum from Mr. Hodgson, marked "from Darjeeling," assuredly never was killed there, though it occurs at the foot of the hills. It appears to be common in Burmah; and Mr. Blyth says that it inhabits "Arakan, Tenasserim provinces, Siam," and that "Mr. Wardlaw Ramsay records it from Rangoon, the Tonghoo, and the Karen hills." Referring to its occurrence in Ceylon, Lieut. W. V. Legge writes (Ibis, 1875, p. 281) as follows:—"Abundant both in the maritime region and in the interior. This species breeds in the sand-hills of Hambantotta. Its range in Ceylon is from the maritime regions of the north, north-west, and east, down the whole of the east side of the island, and round the south-east as far as Tangalle. I have never seen it on the southern half of the west coast; but Mr. Holdsworth has observed it at Colombo, although I never saw it during a three years' residence in that part."

In habits the present species does not differ much from allied species. Von Heuglin says that it does not live in companies, but rather in families and pairs, and frequents the date and *Asclepias* thickets; and Dr. Jerdon, writing respecting its habits in India, says (*l. c.*), "It generally hunts, like the Flycatcher, from a fixed station, which may be the top branch of a high tree or a shrub, or hedge, a bare pole, a stalk of grain or grass, some old building, very commonly the telegraph-wires, or even a mound of earth on the plain. Here it sits, looking eagerly around, and on spying an insect, which it can do a long way off, starts rapidly, and captures it on the wing with a distinctly audible snap of the bill; it then returns to its perch, generally slowly sailing with outspread wings, the copper burnishing of its head and wings shining conspicuously like gold in the sun's beams. Sometimes it may be seen alone, or in small parties seated near each other, but hunting quite independently. It frequently takes two or three insects before it reseats itself on its perch; and in the morning and evening they collect in considerable numbers, and, often in company with Swallows, hawk actively about for some time. I have seen one occasionally pick an insect off a branch, or a stalk of grain or grass; and Mr. Blyth informs me that he has seen a number of them assembled round a small tank, seizing objects from the water, in the manner of a Kingfisher. They roost generally in some special spot, sometimes a few together in one tree; but at some stations all the birds for some miles around appear to congregate and roost in one favoured locality. The bamboo tope at Saugor is a celebrated spot of this kind: here Crows, Mynas, Parrakeets, Bee-eaters, Sparrows, &c. collect from miles around; and the noise they make towards sunset and early in the morning is deafening. The Bee-eater has a loud, rather pleasant, rolling, whistling note, which it often repeats, especially in the morning and towards the evening, and often whilst hunting. They sometimes collect in small parties towards sunset on a road, and roll themselves about in the sand and dust, evidently with great pleasure."

Late in March or early in April nidification commences, the eggs being deposited in a hole made in the ground, without any nest. Mr. R. M. Adam writes (Stray Feathers, i. p. 371) as follows:—"It commences to build here towards the end of March. Although, as a rule, it prefers to build in a bank, I have taken its nest on level ground. The nest is generally about three feet deep; but I have seen them them nearly six feet; and the egg-cavity is a long oval with the major axis about five or six inches; it is without any lining; the angle of the decline from the opening to the nest is about 30°. In some nests which I have dug out, a piece of kunkur or stone has caused the bird to diverge at right angles from the straight line, and then follow the same angle until a sufficient depth has been reached. I have found as many as seven eggs in one nest, although four or five is the normal number; and I have repeatedly found the young birds in the most various stages of plumage, *i. e.* one all but fledged, and the youngest covered with down. On several occasions I have found frogs occupying the egg-cavity of this bird." Mr. R. W. Morgan also writes to me that in Southern India the present species "breeds in the banks of rivers and ghaut-roads, digging a neat tunnel from three to seven feet in depth, with a globular chamber at the end. The eggs vary from three to six in number, and are deposited on the earth, there being no attempt at a nest." Mr. Morgan has sent me eggs of the present species, which are pure white in colour, glossy in texture, rather round in form, and in size average about $\frac{59}{80}$ by $\frac{52}{80}$ inch.

In the series of specimens I have examined I find considerable variations, especially in those from Asia. All that I have seen from Ceylon belong to the variety called by Hodgson *torquatus*, and have the throat verditer-blue, purer in some specimens and in others much intermixed with green; and in some specimens the crown is more rufous than usual. This variety is, Dr. Jerdon says, by no means uncommon in Southern India; and he thinks that the blue tinge is owing to abrasion of the feathers. A specimen from Pegu, in British Burmah, has the throat as green as in Egyptian examples, and the head and nape more rufous than usual; but I find that almost all the Indian examples I have examined vary much in the tinge of the head, as do also those from Egypt, but to a smaller degree. At first, on comparing examples from Ceylon with others from Egypt, I was inclined to treat this blue-throated variety as a distinct species; but a careful examination of a series of specimens has convinced me that this cannot be done. Though in Egyptian birds the throat is almost always pure green, yet in one or two I find the blue streaks on the side larger, and there are blue feathers here and there on the throat, the abdomen in some being much tinged with blue. According to Mr. Blanford, as above stated, specimens from Persia and Baluchistan lack the rufous coloration on the head, but have the throat blue; and Mr. A. O. Hume remarks that examples from Sindh also lack the rufous coloration on the head. Lieut. W. V. Legge, speaking of the blue-throated variety, which is the prevalent form in Ceylon, says (*l. c.*), "the blue throat (*vide* Mr. Holdsworth's catalogue, P. Z. S. 1872, p. 422) appears to me to be a marked characteristic of maturity; this part in the young bird is yellowish green, surrounded by the pale green of the adjacent parts of the fore neck, the throat-band being at that period ill defined and narrower than later on." A specimen from Kenoor, in Captain Elwes's collection, has the upper parts similar to those from Egypt; but the throat is washed with greenish blue, though not so distinctly as in most specimens from Ceylon. In the British Museum there is a good series of specimens from various localities, which differ as follows. Those from Egypt, Nubia, and Abyssinia all belong to the usual form found in Egypt, having the throat green and the head but slightly tinged with rufous. One from Khist, north-east of Bushire, and one from Gwadar, in Baluchistan, have the throat marked with verditer-blue, but not very distinctly, and the head is as in Egyptian examples. Two from Madras, and one from Lahore, have the head rather rufous, that from Lahore being more marked with this colour; but in one there is scarcely a trace of blue on the throat, and none on the other two. One from Darjeeling has the crown as in Egyptian specimens, but the throat and underparts are washed with greenish blue; and one from Nepal has the crown tinged with rufous and the throat and underparts more blue than in any other specimen I have examined. Four from Kamptee have the head slightly tinged with rufous, but they vary much in the amount of blue on the throat. Lastly, two specimens from Burmah have the head and nape very rufous, but the throat is coloured as in Egyptian specimens, being green with a blue streak on each side.

From the above it will be seen that the prevalent form in North-east Africa has the crown sometimes without a tinge of rufescent golden, and sometimes tinged with that colour; but the throat is, as a rule, green, with a blue streak on each side, though occasionally there are traces of verditer-blue on the centre of the throat. In India, on the other hand, though the green-throated form is found, yet most specimens have more or less a blue tinge on the throat, and in some the crown and nape are tinged with rufous, whereas in Burmah one finds a form with a

green throat and the head strongly tinged with rufous, and in Ceylon and Southern India almost all specimens have the throat greenish blue, those from Ceylon having, as a rule, the most blue on the throat, but the crown is as in Egyptian examples. Still, all these differences are so variable that, as above stated, I cannot do otherwise than unite the Indian and African species under the name of *Merops viridis*. I may, however, here remark that Edwards's plate, on which Linnæus based his name *viridis*, represents an Indian specimen of the variety, which has the throat tinged with blue.

The specimen figured is the one above described, from Egypt, and is in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, c. Egypt (*Capt. Shelley*). *d.* Abyssinia (*Verreaux*). *e.* India. *f.* Maunbhoom, India, January 1865 (*Beavan*). *g, h.* Ceylon (*Holdsworth*). *i.* Pegu, British Burmah.

E Mus. Brit. Reg.

a, b, c. Egypt (*Sir S. Baker*). *d.* Nubia (*Schaufuss*). *e.* Atfah, Annesley Bay, Abyssinia, February 5th, 1868 (*Blanford*). *f.* Habab, Abyssinia, July 9th, 1868 (*Blanford*). *g, h.* Zoulla, Abyssinia, June 8th, 1868 (*W. Jesse*). *i*, ♀. Khist, N.E. of Bushire (*Major St. John*). *k.* Gwadar, December 1871 (*Blanford*). *l, m.* Madras. *n.* Lahore (*Marshall*). *o.* Darjeeling (*Hodgson*). *p, q.* Nepal (*Hodgson*). *r, s, t, u.* Kamptee (*Dr. Hinde*). *v.* Shienpayah, Burmah, January 16th, 1868 (*Dr. J. Andersson*). *w.* Mandalay, Upper Burmah, September 25th, 1868 (*Dr. J. Andersson*).

E Mus. G. E. Shelley.

a, b, ♂, *c*, ♀. Egypt, February 1868 (*G. E. S.*). *d*, ♂. Egypt, March 15th, 1868. *e*, ♂. Egypt, March 30th, 1870 (*G. E. S.*).

E Mus. H. J. Elwes.

a, ♂. Bodenar, Kenoor, February 7th, 1870 (*H. J. E.*).

E Mus. E. W. H. Holdsworth.

a, b, ♀. Aripo, N.W. Ceylon, February 13th, 1869. *c*, ♀. Aripo, December 12th, 1869 (*E. W. H. H.*).

Family UPUPIDÆ.

Genus UPUPA.

Upupa, Linnæus, Syst. Nat. i. p. 183 (1766).

The Hoopoes inhabit the Palæarctic, Ethiopian, and Oriental Regions, one species only being found in the Western Palæarctic Region.

They are active and sprightly, easily distinguishable by their large crests, but shy and difficult of approach. They frequent groves, gardens, and fields, especially pastures where cattle graze, and where plenty of insects are to be found. They are often seen on the ground, and probe the soft soil in search of their insect food. They fly with a flapping motion, but not heavily, and though not very swiftly, yet they get over the ground at a good pace. Their usual note is a deep, loud *hoop*, *hoop*; but when quarrelsome (for they are very pugnacious) they utter a deep snorting note. They breed in the holes of trees, walls, &c., making no regular nest, but depositing their eggs on the refuse at the bottom of the hole, and they usually allow it to get into a most filthy condition. Their eggs are elongated, dull greenish grey in colour, and marbled with darker grey, frequently also much stained and discoloured by the refuse in the nest.

Upupa epops, the type of the genus, has the bill longer than the head, slender, arched, pentagonal at the base, four-sided towards the tip, tapering to a point; nostrils oblong, basal; feathers on the crown elongated, forming a large conspicuous crest; wings rather long, broad and rounded, the first quill short, the second scarcely longer than the secondaries, the third, fourth, and fifth nearly equal, the fourth longest; tail rather long, even; feet rather short; tarsus stout, roundish, covered in front with seven scutellæ, and posteriorly also scutellate; claws moderate, rather stout, acute, arched, except that on the hind toe, which is nearly straight.



HOOPOE
UPUPA EPOPS.
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UPUPA EPOPS.

(HOOPOE.)

Upupa epops, Linn. Syst. Nat. i. p. 183 (1766).
Upupa vulgaris, Pall. Zoogr. Rosso-Asiat. i. p. 433 (1831).
Upupa bifasciata, Brehm, Vög. Deutschl. p. 215, t. 15. fig. 2 (1831).
Upupa senegalensis, Swains. B. of W. Afr. ii. p. 114 (1837).
Upupa indica, Hodgs. in Gray's Zool. Misc. p. 82 (1844, nec Layard).
Upupa maculigera, Reich. Handb. Scansoriæ, p. 319 (1853).
Upupa brachyrhynchos, Brehm, Vollst. Vogelf. p. 77 (1855).
Upupa macrorhynchos, id. tom. cit. p. 77 (1855).
Upupa exilis, id. tom. cit. p. 77 (1855).
Upupa major, id. tom. cit. p. 78 (1855).

Hoopoe, English; *Huppe vulgaire*, French; *Abubilla*, Spanish; *Gallo de Marzo* (Cock of March), Andalusian (*L. H. Irby*); *Put-put*, Valencian (*Howard Saunders*); *Poupa*, Portuguese; *Bubbola*, *Bubbula*, *Galetto di montagna*, *di bosco*, *di marzo*, *di maggio*, &c., Italian (*Doderlein*); *Dakkuka tal pennac*, Maltese (*C. A. Wright*); *Wiedehopf*, German; *de Hop*, Dutch; *Hærpop*, *Hærfugl*, Danish; *Härfogel*, Swedish; *Hærfugl*, Norwegian.

Figuræ notabiles.

Buff. Pl. Enl. 52; Lev. Promer. pl. 22; Gould, B. of Eur. iii. pl. 238; Yarr. Brit. B. ii. p. 167; Naum. Vög. Deutschl. Taf. 142; Kjærb. Orn. Dan. Afb. xiii. fig. 1; Schl. Vög. Nederl. pl. 144; Bett. Ucc. nidif. Lomb. tav. xxvii.; Gould, B. of Gt. Br. part xiv.

♂ valdè cristata, cristæ plumis latiusculis cinnamomeis ad apicem nigris, posticis ante apicem nigram albo transfasciatis: pileo reliquo cum collo et pectore vinaceo-cinnamomeis, interscapulio magis cinerascente: dorso postico cum scapularibus nigro et lactescenti-albo vix rufescente transfasciatis: uropygio albo: supracaudalibus nigris: tectricibus alarum minimis vinaceo-cinnamomeis dorso concoloribus, medianis et majoribus nigris latè lactescenti-albo transfasciatis, fascias duas alares conspicuas formantibus: primariis nigricanti-brunneis, primariis sex distinctè albo transnotatis, reliquis pogonio interno albo maculatis, secundariis dorsalibus albo vel lactescenti-albo terminatis et irregulariter transfasciatis: caudâ nigrâ, fasciâ unicâ albâ latâ transnotatâ, et ad basin rectricis extimæ albo maculatâ: abdomine albido, hypochondriis nigricanti-brunneo striatis: subcaudalibus albis: subalaribus rufescenti-albis nigro paullulum variis: rostro nigricante, ad basin mandibulæ carneo: pedibus brunneis: iride fuscâ.

♀ vix a mari distinguenda, sed corpore subtùs minus vinaceo, et lineis hypochondriacis pallidiùs indicatis.

Adult Male. Head with an immense crest of a clear tawny colour; the feathers of the crest conspicuously tipped with black, five or six of the hindermost barred across with white just before the black tip; face and neck as well as the breast pale cinnamon with a vinous tinge; upper part of the back greyish brown; centre of the back and scapulars black, barred across with pale cream-colour: rump pure

white; upper tail-coverts black, with more or less broad cream-coloured edgings; least wing-coverts dull tawny; rest of the wing-coverts black, tipped with creamy white, the median coverts also barred with this colour at the base, so that the bands across this part of the wing are very broad and distinct; quills black, the first primary very short, and having one small spot of white on the inner web, the next six primaries barred across with white on both webs, the next three feathers spotted with white about a quarter of an inch from the tip of the quill, the rest of the secondaries irregularly barred with white, sometimes on both webs, sometimes on only one, so that more or less broad alar bars are thus formed; the four innermost secondaries tinged with buff and broadly barred across with black and white, the two dorsal secondaries longitudinally varied with brown and buff, the latter colour forming a broad edging to the outside of the plume, next to which is a broad line of black which reaches to the shaft; and beyond it, near the base, on the other side of the shaft is another line of buff spreading out obliquely towards the base of the feather, while the inner margin is brown; tail black, with the faintest indication of a white tip to some of the feathers, traversed across the middle by a broad white band, which reaches a little further up towards the tip of the outermost feather, this being also margined with white at the base; belly and abdomen whitish, the flanks striped with brown; under wing-coverts tawny, the little plumes along the edge of the wing whitish varied with black; bill black, flesh-coloured at the base of the lower mandible: legs dusky brown; iris pale brown. Total length 12 inches, culmen 2·3, wing 5·5, tail 3·8, tarsus 0·85.

Adult Female. Exactly similar to the male, but the black not so pronounced and rather more brownish, so that the contrast between the two colours of black and tawny is not so distinctly seen as in the male.

Nestling. Covered with little blue quills, from the points of which the feathers are protruding; a little down on the back of the crown, scapulars, and most on each side of the vent and rump; even at this early age the head is conspicuously crested, but there is no trace of the white bar before the black tip of the crest-feathers; the shaft-stripes, however, can be already distinguished along the flank-feathers. A bird in Mr. A. Basil Brooke's collection, which is a little older, has the plumage developed so as to cover the body, but has still a great many pen-feathers. The white mark before the black tip of the crest is very plainly seen, and extends down the feather a good way; the outer tail-feather is also edged with white on the side and round the tip of the feather, while on some of the other feathers a slight edging of white is apparent.

Obs. The above descriptions are taken from European specimens; and as we have now before us an excellent series of Hoopoes, it may be of interest to consider these the typical specimens, and to examine analytically the various species which are distributed over the Palæarctic, Indian, and Ethiopian Regions. Mr. G. R. Gray, in his 'Hand-list of Birds,' recognizes nine species as belonging to the genus *Upupa*; but we may at once put aside, as spurious or unrecognizable, *U. monolophos* of Wagler, founded on the ninth plate of Levaillant's 'Promerops.' Thus eight birds remain to be characterized, viz.:—*U. epops*, *U. senegalensis*, *U. minor*, *U. nigripennis*, *U. major*, *U. decorata*, *U. marginata*, and *U. longirostris*. Drs. Finsch and Hartlaub, in their grand work on the Birds of Eastern Africa, have given a very complete review of the Hoopoes; so that it would be an easy matter to write a conspectus of the genus *Upupa*, were it not that the distinctions between the different species are in some cases so trivial that it requires no slight study before one can arrive at satisfactory conclusions; and we have therefore carefully worked out the material now before us according to the localities whence the birds come.

Europe.

Switzerland. A specimen in our own collection agrees very well with the Spanish birds described above, but has rather a finer crest, and we notice the appearance of a second and less plainly marked black bar before

the white one on the hinder crest-feathers; the second primary also is not barred across with white, this latter only forming a large spot on the inner web; the first primary also wants the white spot on the inner web. Another bird, however, possesses all these peculiarities, thus agreeing well with the specimens described, as does also an example in Canon Tristram's collection, shot by himself in Geneva; in this latter bird, however, we notice that the frontal feathers are also tipped with black. Total length 10·2–10·6 inches, culmen 2·0–2·1, wing 5·5–5·9, tail 4·1–4·2, tarsus 0·75–0·9.

Italy. Mr. J. H. Gurney, jun., has lent us a specimen from Genoa, which does not differ from the ones described. Total length 10·2 inches, culmen 2·2, wing 5·5, tail 4·2, tarsus 0·9.

Spain. Great variation in colour prevails among the Hoopoes from this country, specimens ranging from a deep cinnamon to a pale vinous buff; nor are these differences seemingly to be accounted for on the score of sex or season of the year. On none of them do we perceive a second black bar to the hinder crest-feathers, and only one bird has a trace of black tips on the frontal plumes. The characters noticed as so variable in some of the birds previously mentioned, are found equally changeable in Spanish examples, no two birds exactly agreeing in the amount of white on the primaries or outer tail-feather, or in the distinctness of the flank-stripes; indeed in one bird the white spot on the inner web of the smallest primary is not of the same size in both wings. Total length 10·9–12·0 inches, culmen 1·6–2·3, wing 5·4–5·9, tail 3·8–4·4, tarsus 0·7–0·8. The specimens from Granada, Madrid, and Aranjuez agree wonderfully well in colour and measurements with one another; but those from Seville seem to be smaller (especially the female), and darker in colour.

Algeria. Five specimens now before us, obtained by Canon Tristram and Mr. J. H. Gurney, jun., all agree in one peculiarity—that is, in having the throat whitish, those killed in the winter exhibiting this character more plainly. No traces of a double bar on the crest are apparent; and only one specimen has the least appearance of black on the feathers of the forehead. Two birds in Canon Tristram's collection, from Gardaia, have more white on the outer tail-feather than any birds yet examined. Total length 9·8–10·5 inches, culmen 2·1–2·3, wing 5·1–5·65, tail 3·9–4·1, tarsus 0·8–0·85.

Smyrna. Two specimens collected by Dr. Krüper in this locality grace our collection. One was obtained on the 30th of March, 1871, and the other on the 3rd of August: both are adult males. These birds differ considerably in colour, the spring specimen being beautifully vinous, while the autumn one is very pale buff; the contrast in the breadth of the flank-stripes is also very marked. Both have a certain amount of white on the throat, and there is not much difference in the markings of the upper surface of the wing; but, while the autumnal bird possesses the characteristics of the normal species, as regards the wing and tail, the other specimen, though seemingly adult, and in rich spring plumage, has not a trace of white spot on the smallest primary, and the white bar on the next quill does not extend beyond the inner web on one wing, while in the other it only stretches on to the outer web in the shape of a narrow bar; this bird also has a narrow white edging extending to the tip and round the edge of the outermost tail-feather. On the other hand the example killed in August has very decided black tips to the frontal feathers. Total length 11 inches, culmen 2·1–2·2, wing 5·7–5·9, tail 4·3–4·6, tarsus 0·8–0·9.

Palestine.—Canon Tristram lends us a specimen from his collection, shot at Nazareth on the 20th of April, 1864. It is of the pale vinous buff colour before alluded to, and has the throat whitish. The markings, however, are normal, with the exception of the tail, which has an immoderate amount of white on the outer feather. Total length 11·3 inches, culmen 2·3, wing 5·75, tail 4·4, tarsus 0·85.

Egypt. Brehm has named the Egyptian bird as distinct, and calls it *U. major*; but we cannot see the slightest difference from specimens from various parts of Europe. Three examples lent us by Captain Shelley measure:—Total length 11·0–11·5 inches, culmen 2·3–2·4, wing 5·5–5·9, tail 4·4–4·7, tarsus 0·85–0·9. One only has the frontal plumes marked with blackish.

AFRICA.

N.-E. Africa. A bird collected by Jesse at Koomaylee in June agrees exactly with European specimens; but a pair obtained by him at Rairo on the 13th of August differ in their slightly smaller bulk, and especially

in having the frontal feathers tipped more broadly with black than any we have yet seen; only one little spot appears on a single feather in the Koomaylee bird. Moreover the inner web of the outer rectrix is white at the base in the female from Rairo, this colour being more extended here than we have hitherto noticed. Total length 9·5–10·5 inches, culmen 1·8–2·2, wing 5·5–5·7, tail 3·9–4·4, tarsus 0·8. As the Common Hoopoe of Europe winters in N.-E. Africa, there is a little difficulty in distinguishing the migrants from the resident birds. Those we have been measuring, doubtless from their dates, belong to the latter class; and we have therefore no hesitation in saying that the Hoopoe which breeds in this locality is the same as the European bird.

W. Africa. The Hoopoe is found in Senegambia, but does not seem to extend further to the south, though Governor Ussher tells us that one came on board ship while he was sailing between the Gambia and Sierra Leone, which was doubtless *U. epops*: in Fantee he has not yet met with it. Sharpe's private collection of African birds contains an example from the river Gambia, which agrees with European birds very well, but has not the white spot on the first primary. We suspect that the Common Hoopoe finds its way to Senegambia in the winter. Total length 10 inches, culmen 2·3, wing 5·4, tail 4·1, tarsus 0·8. Drs. Finsch and Hartlaub mention a bird from Gaboon as exhibiting some differences. These ornithologists state that it is like *U. epops*, but the mantle is rusty cinnabar, like the rest of the head and neck, without any brownish shade, the crest being paler just before the black tip of the feather, but not white; the first secondary is plain white up to the apical third, the others white on the basal half of both webs, black at the end with two white cross bars. From this description the Hoopoe of Gaboon would certainly seem to be quite a distinct species, intermediate between *U. epops* and *U. decorata*; but as the white markings on the wings in the genus *Upupa* vary extremely, it will be well to wait the arrival of a good series of specimens before describing it as distinct.

In South-Western and Southern Africa another species occurs, viz. *U. decorata* of Hartlaub, discovered by Mr. J. J. Monteiro in the former country. We are by no means certain that this species is distinct, the differences being given by Drs. Finsch and Hartlaub as follows, viz.:—Like *U. africana*, but having the secondaries not plain white to the apical third, but with two black cross bars, which are smaller than the white spaces between, the black apical portion with a divided narrow white bar on the middle of the shaft; the underparts from the breast whitish, with pale blackish longitudinal stripes on the sides of the belly. By the kindness of Mr. Monteiro we have been enabled to examine the type specimen, and we can certify to the correct enunciation of the characters of the species as above detailed.

South-western and Southern Africa. By South-western Africa we mean Benguela and Damaraland; and here we have *U. decorata*, and also *U. africana* (*minor* auct.). The last-named bird would appear to be very distinct from the northern species, as it is always distinguishable by its smaller size, deep rufous colouring, and especially by the absence of the white bar on the wing. These characters separate it from all the Hoopoes, excepting *U. decorata*; and we shrewdly suspect that the last-named species is only the female of *U. minor*. In Sharpe's collection are specimens of both birds from Damaraland and Eland's Post, S. Africa, the latter collected by Mr. T. Atmore, and labelled by him male and female, *U. minor* being the male, and *U. decorata* the female.

South-eastern Africa. A specimen in Canon Tristram's collection, obtained by Mr. Ayres in Natal, would seem at first sight to constitute an entirely distinct species from *U. africana*, possessing like this bird no white bar on the wing; it nevertheless differs in the following characters, viz. in having the sides of the face and mantle greyish, and in having the breast and under wing-coverts dull vinous colour. The secondaries are externally barred with black and white as in *U. decorata*. Having a very good series of South-African Hoopoes now before us, however, we find these same differences, only developed in a slightly less degree, in the specimens from Eland's post and Otjimbinque, in Damaraland, which, in the preceding paragraph, we referred to *U. decorata*; and we suspect that, different as all these birds appear at first sight, they will be ultimately found to belong to only one species.

Madagascar. We have not seen a specimen from this island; but it is recognized as distinct by all

ornithologists, and has been called *Upupa marginata* by Dr. Peters. Drs. Finsch and Hartlaub state that it is like *U. epops*, but larger, and with a longer tail; the crest is darker, and has no white before the black bar; the outer tail-feather is more broadly edged with white on the outer web.

ASIA.

India. Two Hoopoes appear in India, one being our European *U. epops*, and the other being *U. indica*, a distinct species. Lord Walden and Canon Tristram have kindly lent us a nice series of specimens, and we have now before us examples of the European Hoopoe from Candeish, Umballah (*R. C. Beavan*), Etawah (*W. E. Brooks*), and Simla (*R. C. Beavan*). In general the colouring of *U. epops* from India is a little paler, especially about the crest; and the other characters vary quite as much as in European specimens. Total length 10·0–12·0 inches, culmen 1·9–2·3, wing 5·45–5·8, tail 3·7–4·5, tarsus 0·75–0·85.

U. indica appears to us to be a distinct species, characterized principally by the absence of white on the crest and the deeper coloration; on some examples, however, a trace of white can be seen on the hindermost crest-feathers, though never so distinctly as in *U. epops*. The vinous colour also seems to extend further on to the abdomen than in the last-named bird. A series of specimens in the collections of Lord Walden and Canon Tristram, from Etawah (*W. E. Brooks*), Umballah (*R. C. Beavan*), Deyra Doon and N.-E. India, give the following measurements :—Total length 9·5–11·0 inches, culmen 2·0–2·35, wing 4·9–5·3, tail 3·7–4·3, tarsus 0·8–0·85. Although, as Dr. Jerdon rightly remarks, the markings on the wing in this species are somewhat smaller than in the European bird, they are the same in character, and vary quite as much, so that the statement of Drs. Finsch and Hartlaub that this bird has no white spot on the first primary does not hold good when a series is examined.

Ceylon. Specimens collected by Mr. S. Chapman in this island are in Lord Walden's collection, and do not, beyond being slightly smaller, differ materially from *U. indica*, though the species has been described by Reichenbach as distinct, under the name of *U. ceylonensis*. Three birds examined measure as follows :—Total length 10·5 inches, culmen 2·05–2·2, wing 4·5–5·1, tail 3·7–4·1, tarsus 0·75.

Burmah. Dr. Jerdon has separated the Hoopoe from this country under the name of *U. longirostris*; and certainly a specimen lent us by Lord Walden, from Tonghu, has a remarkably long bill; but beyond this distinction and the absence of white on the crest, some of the other characters adduced by the describer do not hold good when compared with the series of *U. indica*. The absence of the white spot on the first primary occasionally occurs in both *U. epops* and *U. indica*. Mr. Blyth, however, tells us that when in Burmah he particularly noticed the rufous colouring. Lord Walden's specimen measures as follows :—Total length 10·7 inches, culmen 2·5, wing 5·5, tail 4·4, tarsus 0·9. Mr. Gould has one in his collection (labelled "Indian Peninsula") which is referable to *U. longirostris* (with no white at all on the crest) and measures :—Total length 11·5 inches, culmen 3·25, wing 5·3, tail 4·5, tarsus 0·85. Another one in his collection, from Siam (*Schomburgk*), is very small, and dark rufous in colour, with an entirely black-tipped crest. It measures :—Total length 10·0 inches, culmen 2·0, wing 5·5, tail 4·1, tarsus 0·85.

China. Mr. Swinhoe has collected a fine series of our Common Hoopoe from the neighbourhood of Amoy; and we cannot find any special difference between specimens from Europe and examples from this locality. They vary also to the same extent as European birds; the majority, however, have more white on the outer tail-feather than is seen in most of the western Hoopoes; and one or two specimens have the frontal-feathers thickly spotted with black. In his collection are two very young birds from Peking; and we notice that these are much greyer in plumage, especially on the sides of the face, as in the specimen of *U. africana* from Natal, in Canon Tristram's collection, which we noticed above. A good series of Chinese specimens, all collected by Mr. Swinhoe, give the following measurements :—Total length 9·5–11·1 inches, culmen 1·7–2·4, wing 5·3–5·9, tail 3·6–4·2, tarsus 0·85–0·95. We noticed that the Chinese birds, as a rule, seem to be larger and finer than those from Europe. Some of the specimens have very little white before the black bar on the crest, certainly not as much as in most European birds, and therefore come near to *U. indica*.

Hainan. The specimens in Mr. Swinhoe's collection from this island seem to have rather stouter bills, but otherwise agree with *U. longirostris*. Two out of the three specimens have no white spot on the first primary; and none of them has even a shade of white before the black bar on the crest. A tinge of this colour is always visible in *U. indica*. Total length 9·5–10·5 inches, culmen 2·0–2·5, wing 5·2–5·6, tail 3·7–4·1, tarsus 0·9. It will be seen that the largest of the Hainan specimens agrees with the Tonghu bird above mentioned, as Mr. Swinhoe himself has already remarked; and if it is eventually proved that the Burmese constitutes a recognizable species, the Hoopoe of Hainan will most probably be found to belong to *U. longirostris* rather than to *U. indica*.

Summary.

From the examination of the above material we are inclined to allow the validity of five species of Hoopoes as follows:—

1. *U. epops*, L. General colour pale vinous; crest conspicuously barred with white before the black tip on the hinder feathers. *Hab.* Europe and Siberia, extending to India in winter, resident in China, also in N.-E. Africa, but apparently only a winter visitant to Senegal.

2. *U. indica*, Layard (*U. nigripennis*, Gould; *U. ceylonensis*, Reich.). Darker than *U. epops*. Crest-feathers not distinctly black at the tip, but with a shade of white before the black bar. *Hab.* Resident in India and Ceylon; range to the eastward not determined.

3. *U. longirostris*, Jerd. Larger than *U. indica*, and deeper in colour; bill very long; crest-feathers tipped with black, and no trace of a white bar; thighs very rufous. *Hab.* Burmah to Hainan; probably the Hoopoe of the Indo-Chinese Region.

4. *U. africana*, Bechst. (*U. decorata*, Hartl., = ♀). Distinct and excellent species, characterized by the absence of the white bar on the primaries and the deep rufous coloration: sexes different; no white on the crest. *Hab.* S. Africa as far as Zambesi on the east coast, and Benguela on the west.

5. *U. marginata*, Peters. Like *U. epops*, but larger; no white on crest; outer tail-feather more broadly edged with white than in the European species. *Hab.* Madagascar.

The nomenclature adopted is that used by Drs. Finsch and Hartlaub in their 'Vögel Ost-Afrika's,' where an excellent account of the Hoopoes will be found.

The Hoopoe is a common bird in Southern Europe, but is of rarer occurrence towards the northern part of the continent, though it has once been known to occur in Spitsbergen. It breeds plentifully all over Southern and South-eastern Europe, as well as in North-eastern Africa, but occurs in Africa principally as a winter visitant, when it occupies Senegambia, and has been said to occur in the Cape Colony by Drs. Finsch and Hartlaub, who base this assertion on specimens in the Leyden and Bremen Museums. We ourselves very much doubt the occurrence of the Hoopoe in South Africa. In India it is met with plentifully as a winter visitant—and is found as a migrant in Siberia, apparently on its way to and from China, where it is found all the year round.

It would be difficult to enumerate all the instances of the capture of the Hoopoe in Great Britain; for, as Mr. Stevenson remarks, it is a regular spring migrant, though of exceptional occurrence in autumn. As might be expected, it is met with more frequently in the southern and eastern counties, but occurs not uncommonly inland; and we have even heard of its capture on Hampstead Heath, close to London. In Ireland it is found occasionally. We have received from our friend Mr. J. H. Gurney, jun., the accompanying interesting note on the Hoopoe in England:—"On the 5th of September 1871, I saw at the house of Mr. G. Jell a Hoopoe which had been shot on the 25th of August at Lydd by Mr. Sampson, a farmer, who also killed one in

the spring before last, which is now in my collection. I have also two Hoopoes which were shot at Northrepps and Yarmouth in, I believe, 1860, and a third which was shot at the former place on the 21st of May, 1867, by J. Galley, gamekeeper, who saw another frequenting the same rough ground in May of the following year. Mr. Frederick records seven at Eastbourne in the space of a week, in the 'Zoologist' (p. 5476). Mr. Dutton, writing in the same magazine twelve years later, says (p. 9099), 'Hoopoes must have been very common a few years since, as in many of the old houses and inns you see them stuffed.' In April 1852, the time at which Mr. Frederick recorded them as abundant at Eastbourne, many were also killed at other places, as for instance at Deal (Zool. 3512) and in Norfolk (B. of Norfolk, i. p. 300). It is a very remarkable fact, and one not taken notice of by Mr. Stevenson, that this bird has occasionally occurred in winter in Norfolk (Hunt's Brit. Birds, ii. p. 147; Newton in Zool. p. 1693). He mentions their abundance one year at Lowestoft; and Mr. Dawson Turner informed my father that on one occasion after a gale he had so many brought him that the bank parlour was full of them. He believes there were fifteen at least." There can be little doubt that this pretty bird, if unmolested, would more frequently breed in this country. Yarrell writes:—"Latham had a young bird sent him on the 10th of May 1786. Montagu mentions that a pair in Hampshire left a nest they had begun; and Mr. Jesse, in the third volume of his Gleanings in Natural History, says that 'some years ago a pair of Hoopoes built their nest, and hatched their young, in a tree close to the house at Park End, near Chichester.'" Moreover, at a meeting of the Zoological Society, held on the 28th of September 1841, Mr. W. V. Guise drew attention to a young Hoopoe being killed on the 8th of September at Frampton-on-Severn, by the gamekeeper of Henry Clifford, Esq., of Frampton Court. The most interesting account, however, of the nesting of the Hoopoe in this country has been communicated to the present work by our friend Mr. Howard Saunders, who sends us the following note:—"In the year 1847 a pair of *Upupa epops* nested in a hole of an old yew tree in a shrubbery of an old-fashioned garden at Leatherhead, Surrey. The proprietor was very anxious that the birds should not be disturbed, and a strict veto was placed upon any bird's-nesting in the shrubbery,—a severe trial to our boyish propensities; but we were afterwards rewarded by seeing the parent birds with their young strutting about upon the lawn. As well as I remember, there were five young ones besides the two old birds."

Concerning the before-mentioned specimen from Spitsbergen, Mr. R. Collett writes to us in a letter dated the 19th of July 1870:—"I give the following note, for the correctness of which I can vouch. In August 1869, Mr. H. Friele, of Bergen (a zealous ornithologist, who has purchased Dr. Printz's collection of eggs), visited Hammerfest, and found there, in the possession of a ship's captain, a specimen of *Upupa epops*, which he had caught in the summer of 1868 on Spitsbergen in good condition. Friele saw the bird, and talked to the skipper about it; and I was with Friele this summer and heard all about it." Mr. Collett also says, "In Norway I once procured a fine male in the flesh; it was shot on the 26th of April 1871, at Laurvig, on the Christiania-fjord." In Sweden, according to Nilsson, the Hoopoe occurs, though rarely, in the southern and central parts of the country. It breeds here and there on Gottland. Near Upsala and in the northern portions of Sweden it is but rarely met with. It arrives in Skåne about the 25th of April, and leaves in August or September. It bears a bad name in Scandinavia, and its appearance is, by the peasants,

supposed to forebode war and hard times; and from this is derived its Swedish name, *Härfogel*, literally "army bird." Respecting its occurrence in Denmark, Mr. J. C. H. Fischer states:—"It is a rare bird with us. Since 1862 I only know of one instance of its occurrence, viz. two specimens shot in the late summer of 1868. From information I have collected it appears that thirty years ago it bred commonly with us, whereas it has now entirely disappeared." Our friend Mr. A. Benzon, of Copenhagen, writes to us that "the Hoopoe seems, now that the forests have been cleared of all the old and hollow trees, to have entirely vanished from our fauna. A short time ago it was by no means rare, and bred in many of our forests—amongst others, Hannenov Forest, at Falster, where I often, when a child, procured the young birds. I have in my collection an old male shot at Helsingoer on the 20th of August 1854, but have no eggs taken in Denmark." In Finland, Von Nordmann informs us that, according to Sandelin, it occurred near Uleåborg in 1802, and also near Åbo. Schrader shot a male near Polmak, in Lapland, in September 1849. Meyer says that it is found near Riga and on the Aa, but does not occur at all in some parts of Livonia.

According to Naumann, the Hoopoe is nowhere rare in Germany, indeed very common in some parts, as for instance in Anhalt and parts bordering that district. It inhabits both hilly and low localities, not even excepting the marshes; but it is found everywhere in pairs, never in flocks. It is a bird of passage, arriving in Germany in pairs or singly late in March or early in April, leaving again in August, sometimes in family parties, and migrating very slowly. Dr. Krüper, writing in 1854, observes that it is "not as common in Pomerania as in other parts of Germany. It arrives a few days earlier than the Cuckoo. Last year I heard the first Hoopoe on the 30th of April." Dr. E. Rey, of Halle, sends us a note as follows:—"Here in Germany I have found this bird breeding from the middle of May to the early part of June." Seidensacher says it arrives in Styria late in March or early in April, leaving again in August or September. Schlegel records it as common in Holland, arriving in April and leaving in September; but Mr. H. M. Labouchere tells us that it is not so plentiful as it used to be. According to De Selys-Longchamps it arrives in Belgium about the 10th of April and leaves in September; it nests in the swampy woods on the banks of the Meuse and Campine. On the plains of Hesbaye it only occurs during migration, and is seen in April and at the end of the summer. Degland and Gerbe say that it is common in France, arriving regularly in April and May and leaving in September and October; and according to MM. Jaubert and Barthélemy-Lapommeraye it is common in Provence from April to the end of September. Bailly states that it is not uncommon in Savoy during the periods of migration, but is rarely found there during the breeding-season. Its appearance in spring takes place in April or, sometimes, at the end of March. Lord Lilford writes:—"This species is common, and breeds near Lausanne, in walnut trees, about the meadows bordering the Lake of Geneva."

Lord Lilford in a letter informs us that the Hoopoe is very abundant in all parts of Spain, and is indeed more or less common in all the countries bordering the Mediterranean that he has visited. Major Irby writes to us:—"The Hoopoe is very abundant in Andalucia; but I have not observed it breeding in the vicinity of Gibraltar, though it has been seen on the rock. In 1868 I saw the first on the 27th of March, in 1869 on the 14th of March; in 1870 I observed a single example as early as the 17th of February; and in 1871 I also saw one on the 18th of the same

month." It is also found in Portugal. Herr A. von Homeyer found it common on the Balearic islands, particularly amongst the walls on Minorca, where it nests. The late Mr. W. T. H. Chambers says that it is common in Tripoli. In Algeria, according to Loche, it is very common during the spring and autumn migrations. Dr. Taczanowski also states concerning his acquaintance with the Hoopoe in this country:—"I never saw one of these birds in the mountainous districts: on the 10th of January we met with ten pairs in the oasis of Satscha;" and Mr. C. F. Tyrwhitt Drake procured it in Tangier and Eastern Marocco, where, he says, it arrives about February 20th, and is then to be found all over the country: about April it seems to go further west to breed. Mr. Osbert Salvin, in his paper on the birds of the Eastern Atlas, writes:—"Abundant about Djendeli when we were there. In every direction in the wooded hills of this district the cry from which the bird takes its trivial name might be heard; but common as it was, we never obtained a single egg." Dr. Tristram's 'Great Sahara' contains the following note:—"Arab 'Thibeeh.' Great numbers of Hoopoes resort to the M'zab cities and those of other oases in winter, where they strut about the courtyards and round the tents with the familiarity of barn-door fowls. The natives have a superstitious veneration for this bird; and its magical properties enter largely into the arcana of the Arab 'hakeem.'" In Madeira it was obtained by Heineken; and Mr. Godman records it as occurring in the eastern and central groups of the Azores. Dr. Carl Bolle states that it is common on the lower parts of the Canaries, a few remaining over the winter. Most arrive, however, early in the spring, stay till September, and then leave. He further remarks that, owing to the want of trees, they nest there in holes in the stone walls and clefts of the rocks.

Mr. Wright says that in Malta it is "very common, and a regular visitor in spring and autumn. In both seasons it is one of our earliest arrivals. I have seen it as early as the middle of February and the middle of August. It is said to breed in great numbers in Tripoli." Lord Lilford tells us that he found it tolerably common in Sardinia as early as the beginning of March; and it arrives in Italy from the south in April, leaving again in September. Professor Doderlein gives the following account of the bird in Italy and Sicily:—"The Hoopoe is a migrant, and occurs plentifully near Modena. It commences to appear about the end of March or the beginning of April, and is dispersed over the plains, as well as the woods and mountains; a good many stay to breed; others keep on their way to the north. They return and depart again for the south in September." And concerning the bird in Sicily, he continues:—"These pretty little birds are accustomed to arrive in Sicily either one by one or in small flocks in the last days of March or the first of April, and immediately they begin to fly about and to spread themselves among the groves and wooded country and the mountains nearest the sea; so that many individuals on passage are killed at that time on the alpine heights of Monte Pellegrino. In May some couples go into the interior of the island to breed in mountain groves; but the majority pass on to the continent. As soon as autumn commences they begin to return from their summer migration, so that already, about the 18th or 20th of August, one sees in Sicily individuals of them flitting about the groves and the olive-gardens by the edge of the sea, or flitting about searching after insects round the heaps of manure accumulated about the rustic cottages. About the first days of September, both the indigenous individuals as well as those who have arrived, all take their leave for Africa, not one of them remaining to spend the winter in the island." Lord Lilford, however,

met with it in the neighbourhood of Palermo in November. Captain Sperling observes:—"This is a common bird all round the shores of the Mediterranean. They migrate to Africa in the winter, leaving Europe about the middle of September and returning early in April. I have repeatedly met them at sea during their migrations; besides which I have remarked them as being very common in Syria, Malta, and Rhodes; in the latter place they were hawking for flies in the air." It is, writes Lord Lilford to us, "very common in Epirus and Corfu, arriving in March and disappearing in September. I never found a nest of this species in the island of Corfu; but it breeds commonly on the mainland opposite." According to Von der Mühle it is found in very large numbers in Greece during the autumn migration in the month of September, rarer in spring, when it occurs in March. A few breed in Greece. Lindermayer believes that it breeds in the north of Greece, but cannot bring forward any proof of such being the case. Dr. Krüper sends us a note as follows:—"The migration begins in Greece and Asia Minor early in April, the first appearing about the 24th of March along with *Curruca rüppelli* in Greece; does not breed in Asia Minor, perhaps in Macedonia." Messrs. Elwes and Buckley, in their paper on the birds of Turkey, state that they found it "very common in Bulgaria, where it arrived the first week in April, and frequented the stony hillsides and bare plains of the Dobrudscha, as well as the orchards and vineyards. A Hoopoe pie is said to be a common dish in summer at Kustendji, where it is known by the name of 'Poopoo.'" Mr. Robson writes:—"This species is abundant, and breeds in European and Asiatic Turkey; great quantities of them are shot in the autumn migration by sportsmen, as at this season they are very fat and much esteemed for the table." Mr. Elwes also sends us a note:—"What we know of the habits of the Hoopoe in England would lead us to suppose that it was a delicate bird, unable to stand much cold, and fond of rich and cultivated countries. Its haunts in the East, however, are very varied. I have seen the Hoopoe common in some of the wildest and most desolate valleys of the Himalaya, at an elevation of from 12,000 to 15,000 feet above the sea, though it migrates to the plains during the cold weather. In the south of Russia it is one of the first summer migrants to arrive; for I have seen it near Odessa in the third week in March, though the weather was very cold." According to Professor von Nordmann, it is one of the commonest birds in Southern Russia, is found both in the gardens and on the steppes, and breeds there: it arrives early in April. Dr. E. Eversmann says that it "has about the same range as the Roller, but occurs rarely as far as Kazan. On the shores of the Lower Ural and Volga rivers it is very common, and frequents the neighbourhood of the villages, seeking its food on the refuse-heaps, which are overgrown with wormwood and other plants. Near Orenburg it is common." The Hoopoe, Ménétriés observes, is "very common in the steppes from the Don to the baths of the Caucasus, never wandering far from habitations."

Turning southward again, we learn that De Filippi found it spread over Persia, particularly in Armenia; and Messrs. Dickson and Ross noticed the Hoopoe at Erzeroom from April 12th to September 17th, most common during summer. The late Mr. Strickland, during his residence at Smyrna, says it was seen at Hushan in April. Canon Tristram states that it is "abundant in Palestine, in the wooded districts, returning about the end of March." Mr. E. Cavendish Taylor found it very common in Egypt throughout the winter, and he procured both eggs and young birds in Upper Egypt in March. Captain Shelley observes:—"This bird is extremely

plentiful throughout Egypt and Nubia, frequenting the neighbourhood of villages, where it may be daily seen perched upon a mud wall or bough singing its simple song of 'Poop, Poop, Poop,' or else strutting along the ground with dignified gait, stopping here and there to drive its beak into the earth after its insect food." Mr. C. W. Wyatt, in his paper on the birds of the Sinaitic Peninsula, says:—"The Hoopoe is well known to the Arabs; it is a spring visitant, but had not arrived when I left." Von Heuglin, in his excellent work on the ornithology of North-eastern Africa, says that "the Hoopoe is not only a common winter resident in North-eastern Africa, but breeds also in numbers in Egypt and Nubia in March and April, generally using the holes of walls for the purpose of nidification. It is found singly or in pairs, or else in small scattered companies about buildings, hedges, or pasturages, bush-covered places, and along the canals, particularly where rubbish has been shot. In Abyssinia, Senaar, and the White Nile, a southern race is found during and after the rainy season, which I scarcely believe is sedentary there. I cannot consider this to be a separate species; but it invariably differs by the absence of the pure white band before the black points on the crest-feathers (which is sometimes but very indistinct), and by the richer cinnabar-coloured head, neck and shoulders." Von Heuglin also records it from the Danakil country, between the peninsula of Buri and the Gulf of Tadjura. Sharpe has specimens from the river Gambia in his collection.

Messrs. Dybowski and Parvex state that it is common in Dauria. Dr. Radde says:—"I observed the Hoopoe on my journey to Siberia, here and there all along the post-road that leads to Irkutsk. In Dauria it is not uncommon on the high steppes, and is found on the eastern slope of the Apfel-Gebirge, up to an altitude of 3500 feet above the sea, where the young were fledged at the end of July, at the frontier post of Altanskisch. At the end of August it had left the neighbourhood of the Tarei-Nor. It was also met with in the flat parts of the Chingan mountains; and I saw it oftener on the Upper Amoor, particularly near the Chinese villages above and below the town of Aigun. In the Bureja mountains it affected the open lofty oak groves."

Von Middendorff does not mention it; but Dr. von Schrenck gives the following note:—"In the north of the Amoor the Hoopoe is found to the east coast of Asia. We received from Mr. Maack a specimen from the source of the Amoor, which was shot on the 21st of April O. S., at the town of Nertschinsk. I noticed it in the Lower Amoor, on the left willow-covered shore of the river, opposite Maji, on the 26th June O. S., and obtained one through Mr. Maximowicz, from the Mariinskisch post, which was caught alive on the 11th (23rd) of April, when this bird was first seen there in the spring of 1855. I found the stomach of this bird full of remains of various coleoptera, and especially the wing-covers of *Silphæ*." On the authority of Mr. Maximowicz, it is also included among the birds of Northern Japan. In China Mr. Swinhoe says it occurs from Canton to Peking.

Regarding its occurrence in India, Dr. Jerdon writes:—"The Hoopoe of Europe is found in the Himalayas, in Northern India, in Lower Bengal, and in various parts of India as far as the Neilgherries. It extends to Assam and perhaps to Upper Burmah. I procured it at Darjeeling: there it is a winter visitant only. In Nepal and Bengal also it is only a winter bird; and Adams states that it migrates southwards from Cashmere to the Punjab and India in winter." Captain Hutton says, at "Candahar this bird was scarce, and only a summer visitor. I saw it, however, in the valley of Pisheen on the 6th of March."

12

The Hoopoe is a sprightly, active bird, easily distinguishable both on the wing and when sitting. It is, however, very shy and difficult to approach. Naumann gives a most excellent description of its habits, which we translate as follows:—"It is cautious and shy, flying away on the approach of man, even when living unnoticed and unmolested near human habitations. It is more timid than cautious; for its nervous, frightened manner may be observed by any one. Even a Swallow flying over frightens it, and it starts and spreads its crest, but closes it again so soon as it sees that there is no danger; or if a Pigeon, or any larger bird, passes over, it takes refuge directly in some near tree; or should a bird of prey, or even a Crow, appear when it is running about, it drops immediately on the ground, spreads its tail and wings wide out, so far that the points of the latter almost touch, throws its head back and sticks up its beak, and the banded wings and tail surround it like the petals of a flower. So long as danger threatens, it remains in this odd position, probably to deceive its enemy; for when thus spread out the Hoopoe looks, as Bechstein remarks, more like an old particoloured rag than a living bird." It frequents both the open country and the woods, but is seldom, if ever, seen where trees or bushes are entirely wanting. Where groves of large old trees border pasturages, there it seems to be chiefly found; and in localities like this, Dresser found the Hoopoe abundantly in Spain. It goes a great deal on the ground, and walks with ease, nodding its head as it goes along. The crest is generally kept closed, and forms a long point, corresponding with the beak, at the back of the head, which gives the bird a peculiar appearance. When irritated, alarmed, or when paying its court to the female in the spring, it spreads its crest, but seldom otherwise. Its usual note is a deep, loud *hoop hoop*; but Naumann says that when quarrelling they utter a deep snorting note like *Chrr*, resembling a Starling's note, but hoarser; and when pleased it utters a hoarse, dull call, like *wäck, wäck, wäck*. Mr. Robson, of Ortakeuy, sends us the following capital account:—"In Turkey, where the vernacular name signifies 'Mountain-Cock,' they are most partial to the sides of mountains, although often found in the valleys. They feed much in the bare places on the mountain-sides, in graveyards, or where stones are accumulated, also at the bottom of walls; their food consists principally of ants. During the autumn migration numbers of them are shot in the stubble-fields. The Hoopoe is a pugnacious bird; and pairs are seen fighting, jerking their crests up and down, and standing to each other like game-cocks. When seen moving rapidly about seeking for food, with their crests constantly in motion, their lively activity is pleasant to observe; and their colours afford a conspicuous contrast to the localities which they affect, and unfortunately render them an easy mark for the sportsman. Odd birds are seen late in the autumn and early in the spring; but none are met with in winter."

Dr. Jerdon's account of the bird's habits is as follows:—"In captivity the Hoopoe is said to be readily tamed and to show great intelligence and susceptibility of attachment. Musselmans venerate the Hoopoe, on account of their supposing it to have been a favourite bird of Solomon, who is said to have employed one as a messenger. It is stated that the oily matter secreted by the sebaceous gland on the tail-bone assumes, in the female at the breeding-time, and on the young in the nest, an intolerable stench, whence an idea prevalent in some countries, that this bird makes its nest of cow-dung. Dr. Adams states that in Cashmere, where it is very common, the King-Crow (*Dicrurus longicaudatus*) very often robs it of its prey. I found a Hoopoe breeding in the Nilgherries in May, and am not now certain whether it was the present species

or the Indian Hoopoe. It nestles in holes of walls, trees, &c., and lays several pale greenish-blue or bluish-white eggs. Pallas states that he once found the nest of one within the exposed and barely decomposed thorax of a human body, with seven young birds just ready to fly, which defended themselves by a most fetid fluid. Its voice is a pretty loud double or treble *hoop*, whence its name in most languages. It feeds on the ground, walking with ease, and picking up various insects, as coleoptera, ants, grubs, and small grasshoppers." Lord Lilford writes:—"I have once or twice seen this bird climb a tree in the manner of a Woodpecker, but I do not think that this is its common practice."

Mr. Yarrell gives the following account of a captive bird which lived in the possession of Mr. A. D. Bartlett for some time:—"This bird is quite tame; and when unexcited, the high crest falls flat over the top of the head and covers the occiput; it takes a meal-worm from the hand very readily, nibbles and pinches it between the ends of the mandibles, then putting it on the ground, strikes it several blows with the point of its beak; when the insect is apparently dead or disabled it is again taken up, and by a particular motion of the head, which is thrown backward, and the beak opened, the meal-worm drops into the gape of the mouth and is swallowed. The call for another is a sharp note; but it also utters at times a sound closely resembling the word 'hoop, hoop, hoop,' but breathed out so softly, but rapidly, as to remind the hearer of the note of the Dove. This bird constantly rubs himself in the sand with which the bottom of his large cage is supplied, dusting himself like the Larks, but takes great care to shake off any sand or gravel that may adhere to his food, which is raw meat, chopped, and boiled egg. He hides superfluous food, and resorts to his hoard when hungry. When allowed to come out of his cage, he takes short flights about the room, but would not be considered a bird of great power on the wing; yet the Bishop of Norwich has recorded that one 'approached a vessel in the middle of the Atlantic, and kept company with it a good way, but did not settle on board, which it probably would have done had it been tired.' At the moment of settling on the floor of the room, Mr. Bartlett's bird bends the head downward till the point of the beak touches the floor, after which, as well as occasionally at other times, the long feathers forming the crest are alternately elevated and depressed in a slow and gracefnl manner, the bird assuming an appearance of great vivacity, running on the ground with a very quick step. M. Necker, in his Memoir on the Birds of Geneva, says that Hoopoes fight desperately and leave the ground covered with their feathers." In his latest paper on the birds of China, Mr. Swinhoe gives the following interesting particulars concerning this bird's note:—"I described in the 'Zoologist' for 1858, and in the P. Z. S. for 1863, the peculiar way in which the Hoopoe produces its notes—by puffing out the sides of its neck and hammering on the ground at the production of each note, thereby exhausting the air at the end of the series of three, which make up its song. Before it repeats its call, it repeats the puffing of the neck, with a slight gurgling noise. When it is able to strike its bill, the sound is the correct '*hoo-hoo-hoo*,' but when perched on a rope and only jerking out the song with nods of the head, the notes more resemble the syllables '*hoh-hoh-hoh*.' Mr. Darwin makes use of this last fact to show that some birds have instrumental means to produce their music ('Descent of Man,' ii. p. 62). It is not to this point, however, that I wish to call attention, but to the fact of the bird's puffing out the sides of its neck. It is generally supposed that the song of a bird is produced by actions of the lower larynx on air passing up the

bronchial tubes, onwards and outwards through the main tube or trachea. The trachea of the Hoopoe is not dilatable; but its œsophagus is; and the puffing of its neck is caused by the bulging of its œsophagus with swallowed air. There is no connexion between the œsophagus and the trachea, and apparently no organ at the entrance to the former that could modify sound; what action, then, can this swallowed air be made to take in the production of the bird's notes? Pigeons have strikingly large air-crops, which they empty with each long coo, and refill before they coo again. Many birds swell out the throat when calling or singing; and others move it up and down; these actions must also be caused by the swallowed air in the œsophagus, and must modify the sounds in some way as variously used, adding power and richness in some cases, or giving ventriloquistic effect in others. This question seems never to have been inquired into before; and I throw out the hint in hopes that others may help to elucidate the matter with their investigations. As regards Pigeons, Mr. W. B. Tegetmeier suggests 'that the dilated œsophagus and crop serve as a chamber of resonance, the air in which being thrown into vibration, may be expelled to produce a louder sound.'"

Its food consists entirely of insects and their larvæ, which it picks up from the ground, or draws out of the ground or its holes with its long pointed beak. About pasturages, where insects are to be found in the old cow-dung, it is regularly to be found in search of food, and is fond of the various species of *Scarabæi*. Mr. Gatcombe tells us that the stomachs of all the British specimens he examined contained larvæ of beetles, and one killed near Plymouth, in May 1871, had the remains of larvæ and elytra of beetles mixed with feathers from the bird's body. Mr. Collett also found the remains of coleoptera, chiefly *Bembidia* and *Aphodii*, in the stomach of the example which he obtained near Christiania; and Mr. J. H. Gurney, jun., tells us that he found the remains of a caterpillar inside one that he killed in Algeria. Von Homeyer states that "It feeds chiefly on the *Staphylinæ*, which are found abundantly in cow-dung, and which it picks out with great dexterity. If disturbed when doing this, it is curious to observe how it repeatedly returns to see if the intruder, who may also be looking after beetles, is still there; and when he leaves, the bird immediately returns. Does this arise from greediness or curiosity? I think the latter; for often enough the bird visited the dung-heaps which had been turned over and flew off without looking for insects." The late Captain Beavan also remarks:—"The Hoopoe has evidently the power of smelling grubs and worms that lie an inch or two below the surface of the ground. It is an interesting sight to watch one feeding. His bill appears to quarter every inch of the soil; and when a grub is discovered, down it goes deep into the ground, seizes the grub, which is then thrown (Hornbill-like) into the air, and swallowed." Mr. Swinhoe writes:—"Feeds on worms, for which it stamps the ground with its feet, clutching them by the head with its bill. It bruises the worm by beating it against the ground, and then, throwing up its head, jerks it down to its small mouth, and finally swallows it."

It is a pity that so graceful and neatly plumaged a bird as the Hoopoe should be so filthy in its habits; and many causes have been assigned as to the reason why the nest is always in such a disgusting condition. From the excellent observations of Dr. Scott, which are given below, and from other remarks which will be found detailed in the present article, it will be noticed how closely the present bird assimilates to the Hornbills in habits; and the fact mentioned by Dr. Scott, of the female not leaving the nest whilst she is sitting, would sufficiently account for

the dirty condition of the bird and the young, and would fully justify the name of "Stink-bird," by which it is known in several parts of the Continent. Von Oken states that the smell arises from the dung of the nestlings not being removed, and from cow-dung being used in the construction of the nest. Gloger says the same. Naumann denies the above, and states that the birds carry away the droppings of the young.

The Hoopoe nests generally in hollow trees, choosing such as have holes where the wood is dead-rotten; and on this soft rotten wood it deposits its eggs, without making any nest whatever, unless a stray piece of grass or two or a few pieces of dry cow-dung may be thus termed. When the young are hatched they remain in a state of filth, which causes an unbearable stench, until ready to leave the nest; and the smell does not leave the young birds until several weeks after they have deserted their unsavoury abode. Lord Lilford sends us the following account:—"The Hoopoe seems, as a rule, to prefer a hole in a hollow ash or willow for nesting in; but I have seen a nest on the ground under a large stone, others in holes on the sunny side of mud or brick walls, one in a fissure of limestone rock, and one in a small cavern. The eggs when first laid are of a beautiful pale greenish blue, but soon become stained and dirty, so that the average Hoopoe's egg is of a dirty yellow colour. In some instances I have found a good deal of nest (bents, feathers, a few small twigs, &c.), in one or two cases no nest at all, the eggs lying on the bare wood—but in almost every instance ordure of some kind, human, bovine, or equine, and invariably an almost intolerable stench. The young birds have a curious hissing note, and snap their bills when startled or alarmed." Dr. Krüper writes, it makes its nest in various places, generally in holes of trees; a curious nesting-place I may name is in a heap of stones at the edge of a wood. And Mr. Swinhoe, in one of his interesting papers on Chinese birds in 'The Ibis,' has published the following account:—"Many years ago a pair of Hoopoes took possession of a hole in the city-wall at Amoy, near my house. The hen sat close until the young were hatched, the male frequently supplying her with food during the day. Hoopoes have often bred in the holes of exposed Chinese coffins; the natives hence have an objection to them, and brand them as the 'Coffin-bird.' The young, when hatched, are naked, but soon get covered with small blue quills, which yield the feathers. The tail, or *os coccygis*, is carried at right angles, and the fæces are discharged to a distance. The little creature has a short bill, and crouches forward, making a hissing noise. It looks a strange compound of the young Wryneck and Kingfisher. They do not stand upright till nearly fledged. Their crests develope at once, but their bills do not acquire their full length till the following year." Dr. David Scott, in a letter to Mr. Blyth, dated "Umballah, Nov. 4th, 1865," says:—"This year I had two Hoopoe's (*Upupa epops*?) nests in my veranda; and after the hens began to sit I never saw them outside at all, but the two males fed them regularly inside the nest. When Colonel Tytler came down some time last month, I mentioned that I was almost positive that the hen Hoopoe never left her nest during the period of incubation. He said at once that this was curious, as you believed that the Hoopoe was nearest in structure to a species of *Buceros* in which this was the case (as you are aware, I have not the very slightest pretension to be an ornithologist in any way beyond mere observation; I was therefore quite ignorant of what Colonel Tytler mentioned)—as well as Dr. Jerdon directly I told him. These two pairs of Hoopoes were so tame and used to seeing me sitting in the veranda, that my presence never disturbed them in the least; and I twice

saw the males tread the females just at the bottom of the steps, and within ten yards of where I was sitting. I was therefore thoroughly familiar with them, and can assert most positively that, for a number of days, I never saw the female of either pair out. I did not pay any attention at first to the circumstance of there being only two flying about, until I observed both males going up to the nests with gnats in their bills, giving a call, and then putting their heads inside for the hens to take the food. The feeding-times were morning and evening, at regular hours—the former about seven or eight o'clock, and again in the afternoon about four o'clock. I have seen the males getting the gnats &c. close under the very steps I was sitting on, and almost within two yards of my chair, then flying up, giving a call, and coming down again directly the food was taken. The nests were at opposite ends of the veranda; and only one of the broods came out. I saw some time ago a notice in 'The Field,' mentioning the dirty state of the nest before this would have been caused by the young; and if my idea is correct, the explanation is simple. I never saw the males go inside the holes in which the nests were, and I never saw either of the females outside during the time they were hatching, though of course it is possible they may have gone out. If I should live, I will, next spring, observe more carefully; but it was a good while before I noticed the absence of the females this year. Last year I had one nest only in the veranda, and another in the veranda of my office. The Hoopoe, I know, breeds in France; and possibly you may be able to find out if any notice of this fact has been taken." And in a second communication he adds, "In continuation of my letter of last year, I may mention that there were again this spring two Hoopoe's (*U. epops*) nests in my veranda, and in the same place. I find that the hens do leave the nest once or twice a day; but I have never seen them stay out longer than to give time to get rid of their droppings, and I have never seen either of them on the ground when out. Generally speaking they perch on a tree near at hand, and, after sitting a few moments for the purpose mentioned, fly back to the nest. Two or three times (once when Dr. Jerdon was sitting in my veranda) one of the hens flew out, passed her dropping whilst on the wing, and returned to the nest without having settled anywhere. They are fed most indefatigably by the cocks, and the number of grubs, small worms, and so forth, destroyed by them is very great. Curious to say, I saw a Hoopoe killing a locust, which I hardly thought its bill capable of doing. Unfortunately it was disturbed, and flew away, leaving the insect dead on the ground, so that I had no opportunity of ascertaining how it would have managed to swallow such a large morsel. Three young ones from one nest and two from the other made their appearance in due course; and I repeatedly saw the nine feeding together of an evening. But in the evening of the 11th inst. I saw no less than *twenty-one* Hoopoes feeding, within a space of thirty yards by ten, on the soft ground where the grass was still green, the whole of the rest of the soil in the neighbourhood being parched by the drought. Whilst the young ones were newly out of the nest they very often sat in the veranda, and I was struck by the shortness of their bills. The birds themselves are not very much smaller than the parents, whilst their bills appeared to me not above half the length. To the best of my belief the female during the time of sitting is entirely fed by the male, and is only off the eggs for a minute or two, and frequently not so long, once or twice a day, for the purpose mentioned before."

In Dresser's collection a dozen eggs of this bird vary in size from $\frac{37}{40}$ by $\frac{25}{40}$ inch to $1\frac{1}{40}$ by

$\frac{29}{40}$ inch, the former being from Styria, and the latter from Lower Egypt, the Egyptian eggs being on an average much the larger. In shape they are elongated, almost pure oval, and in colour a dull greenish grey, sometimes tinged with rufous, and having a peculiar marbled or stone-like appearance. Dr. Rey writes to us that the average size of twenty-five eggs from Germany is 26·6 by 17·6 millims., the largest measuring 28·0 by 18·0, and the smallest 25·0 by 17·5. The number in each clutch varies from five to seven, in one instance eight. Fresh eggs were taken from the 13th of May to the 13th of June.

Canon Tristram writes in his 'Natural History of the Bible':—"Few birds have had more absurd fables attached to them than the Hoopoe. The Arabs have a superstitious reverence for it, and, believing it to possess marvellous medicinal qualities, they call it the 'Doctor-bird.' Its head is an indispensable ingredient in all their charms and in the practice of witchcraft. They also believe that it listens to whispers and betrays secrets, and, what is far more important, that it has the power of detecting water and of pointing out hidden wells and springs. These attributes have doubtless been suggested by the quaint and grotesque movements of its head and tall crest, which it erects in walking, and then, with a solemn portentous look, it bends its head down till the bill touches the ground. The Greeks and Romans had equally absurd superstitions respecting the Hoopoe. It is considered a filthy feeder, chiefly from its habit of resorting to dung-hills, which it probes assiduously with its long delicate bill in search of small insects. It was probably from its filthy habits and resorts, as well as from the superstitious reverence in which it was held by the Egyptians, that it was especially enumerated among the unclean animals in the Mosaic Law."

Dr. A. L. Adams, in his paper on the Birds of Egypt and Nubia, observes:—"Ælian says the Egyptians respected the Hoopoe for its love of its young (?). In the 'bird-writing' it signifies a 'brick,' perhaps from its disposition to perch on the crude brick-walls of the native huts. On the walls of one of the famous tombs at Beni Hassan a bird-catcher is seen hauling his clap-net, which is filled with Geese and Ducks, whilst on a tree by his side, among other birds of the country, is the Belted Kingfisher, Hoopoe, and Pied Wagtail. The latter, excepting a little exaggeration in colouring, has been drawn with great accuracy. The Hoopoe is exceedingly well done, and, in common with many of the other delineations, retains the brightness of its colouring, although at least 3800 years have gone by. It is interesting to observe that the familiar tenants of the Nile valley in those days were the same as now; possibly they may at present be more plentiful, as Egypt was then more densely populated by the human race."

The descriptions of the adult male and female are taken from Spanish examples in our own collection, that of the nestling from a specimen procured in Sardinia by Mr. A. Basil Brooke, and kindly lent to us by him. The chick is in our own collection, and was sent to us by Mr. W. Schlüter, of Halle-on-Salle, who procured it from Galicia. The bird figured in the Plate is a Swiss specimen, also in our own possession.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, pullus. Galicia (*W. Schlüter*). *b, c.* Switzerland (*J. F. Moeschler*). *d, e,* ♂ ♀. Seville, May and June 1871 (*Ruiz*). *f, g,* ♂. Smyrna, March 31st and August 3rd, 1871 (*Dr. Krüper*).

E Mus. R. B. Sharpe.

a. Koomayli, June 5th, 1868 (*W. Jesse*). *b*. Rairo, August 13th, 1868 (*W. Jesse*). *c*. River Gambia (*H. Whitely*).

E Mus. J. H. Gurney, jun.

a. Genoa, 1871 (*J. H. G.*). *b*, ♀. Ain Oussera, March 19th, 1870 (*J. H. G*). *c*, ♀. Laghouat, May 4th, 1870 (*J. H. G.*).

E Mus. H. B. Tristram.

a. Geneva, 1844 (*H. B. T.*). *b*, *c*, ♂. Gardaia, Sahara, December 5th, 1856 (*H. B. T.*). *d*, ♀. Laghouat, Sahara, November 14th, 1856 (*H. B. T.*). *e*, ♂. Nazareth, April 20th, 1864 (*H. B. T.*). *f*, *g*, *h*. Etawah (*W. E. Brooks*). *i*. Amoy, October 1857 (*Hance*). *j*, *k*, *l*, *m*. Amoy, May 1861 (*R. Swinhoe*).

E Mus. Lord Lilford.

a, ♂. Aranjuez, April 25th, 1865 (*L.*). *b*, ♂. Aranjuez, May 3rd, 1865 (*Garcia*). *c*, ♀. El Pardo, Madrid, April 19th, 1865 (*L.*). *d*, ♀. Casa de Campo, Madrid, April 10th, 1865 (*Manuel de la Torre*).

E Mus. Howard Saunders.

a, ♂. Coria, Spain, May 15th, 1868 (*H. S.*).

E Mus. G. E. Shelley.

a, *b*, *c*. Egypt (*G. E. S*).

E Mus. A. B. Brooke.

a, ♀, *juv*. Sardinia, May 29th, 1871 (*A. B. B.*).

E Mus. Lord Walden.

a, ♂. Rairo, August 13th, 1868 (*W. Jesse*). *b*, *c*, *d*, *e*. Candeish. *f*. Simla (*R. C. Beavan*). *g*. Maunbhoom (*R. C. Beavan*). *h*. Umballah (*R. C. Beavan*). *i*. Amoy, May 1861 (*R. Swinhoe*).

E Mus. R. Swinhoe.

a. Granada, Spain (*Howard Saunders*). *b*, *c*. Peking, June and July 1868 (*R. S*). *d*, *e*, *f*, *g*, *h*, *i*, *j*. Peking, May, December, and November 1866 (*R. S.*).

Suborder COCCYGES ZYGODACTYLI.

Family CUCULIDÆ.

Genus CUCULUS.

Cuculus, Linnæus, Syst. Nat. i. p. 168 (1766).

The species belonging to the genus *Cuculus* are distributed throughout the Palæarctic, Ethiopian, Oriental, and Australian Regions, only one species being found in the Western Palæarctic Region, where it is a summer visitant, migrating southward early in the autumn.

These birds frequent gardens, groves, and fields, in fact any localities where their insect food is abundant. They are shy and wild, tolerably swift on the wing, flying somewhat like a Hawk; but on the ground they are clumsy and awkward, and progress by means of short hops. They feed entirely on insects of various kinds, being very partial to hairy caterpillars. Their call-note consists of the well-known syllables *ku koo*, from which they derive their name, this being the call-note of the male only, the call of the female being a sort of laughing note.

The Cuckoos are peculiar in their breeding-habits; for they make no nest, nor do they take any care of their offspring, but deposit their eggs in the nests of other birds, to whose care they leave them entirely. Full particulars of the breeding-habits of our Cuckoo are given in the following article.

Cuculus canorus, the type of the genus, has the bill rather short, wide at the base, compressed towards the tip, decurved, and pointed; nostrils basal, oblong, bare; head without crest; wings long, broad, but pointed, the first quill shorter than the sixth, the second about equal to the fourth, the third longest; tail long, graduated; feet rather short, weak, two toes directed forward and two backward; tarsus short, scutellate, feathered for about half its length; claws strong, compressed, curved, acute.



CUCKOO
CUCULUS CANORUS

CUCULUS CANORUS.

(CUCKOO.)

Cuculus, Briss. Orn. iv. p. 105 (1760).
Cuculus canorus, Linn. Syst. Nat. i. p. 168 (1766).
Le Coucou, Montbeill. Hist. Nat. Ois. vi. p. 305 (1779).
Cuculus hepaticus, Lath. Ind. Orn. i. p. 215 (1790).
Cuculus rufus, Bechst. Orn. Taschenb. i. p. 84 (1802).
Cuculus borealis, Pall. Zoogr. Rosso-As. i. p. 442 (1811).
Cuculus cinereus, C. L. Brehm, Vög. Deutschl. p. 153 (1831).
Cuculus rochii, Hartl. Proc. Zool. Soc. 1862, p. 224.
Cuculus indicus, Cab. Mus. Hein. iv. Heft 1, p. 34 (1863).
Cuculus telephonus, Heine, J. f. Orn. 1863, p. 352.
Cuculus libanoticus, Tristram, Proc. Zool. Soc. 1864, p. 432.

Cuthag, *Cuach*, Gaelic; *Coucou gris*, French; *Cuco*, Portuguese; *Cucu*, Spanish; *Cuculo*, Italian; *Kuku* or *Dakkuku-Kahla*, ad., *Sultan-il-gameniem*, young, Maltese; *Takouk*, *Oukouk*, Moorish; *gemeiner Kuckuk*, *Gauch*, German; *Koekoek*, Dutch; *Gjög*, *Kukker*, Danish; *Gjög*, Norwegian; *Gök*, Swedish; *Käki*, Finnish; *Kukushka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 811; Werner, Atlas, *Zygodactyles*, pl. 1; Kjærb. Orn. Dan. taf. 10, Suppl. pl. 4; Frisch, Vög. Deutschl. taf. 51, 51, 52; Fritsch, Vög. Eur. taf. 4. figs. 8, 9; Naumann, Vög. Deutschl. taf. 127, 128, 129; Sundevall, Svensk. Fogl. pl. 21. figs. 4, 5; Gould, B. of Eur. pl. 240; id. B. of G. Brit. iii. pls. 67, 68; Schlegel, Vog. Nederl. pls. 55, 56; Bettoni, Ucc. Lomb. pl. 92; Sparrm. Mus. Carls. pl. 55.

Ad. suprà saturatè cæruleo-cinereus, fronte pallidiore, uropygio et supracaudalibus magis schistaceo-cæruleis: remigibus saturatè fuscis cinereo tinctis, in pogonio interno albo transfasciatis: caudâ nigricante albo guttatâ et terminatâ: gulâ, gutture et pectore superiore pallidè cæruleo-cinereis: corpore reliquo subtùs albo nigricanti transfasciato, crisso vix cervino lavato: rostro sordidè corneo, ad basin flavido: iride et pedibus flavis.

Juv. capite et corpore suprà saturatè fuscis transversim ferrugineo fasciatis, plumis angustè albo terminatis: vittâ albâ in nuchâ: remigibus saturatè fuscis, extùs ferrugineo fasciatis et albo terminatis, in pogonio interno albo transfasciatis: caudâ fuscâ, albo guttatâ et terminatâ et ferrugineo fasciatâ: gulâ et gutture cervino-albidis nigricanti fasciatis et fumoso lavatis: corpore reliquo subtùs cervino-albo nigricanti transfasciato, abdomine imo magis rufescente cervino tincto: iride fuscâ.

Adult Male (Hampstead, April). Upper parts generally dark bluish ash, the head rather paler, the rump and upper tail-coverts deep slaty blue; quills dark brown, with an ashy tinge, on the inner web broadly barred with white; tail graduated, blackish, spotted with white, and tipped with the same colour;

throat and upper breast pale ashy blue; rest of the underparts white, barred with blackish; bill dusky horn, yellowish at the base and edges; gape orange-yellow; iris and legs yellow. Total length about 13·5 inches, culmen 0·9, wing 8·35, tail 7·0, tarsus 0·92.

Adult Female. Closely resembles the male in plumage, but is, perhaps, rather smaller in size.

Young (Gårdsjö, Sweden). Upper parts deep clove-brown, transversely barred with pale ferruginous brown, most of the feathers narrowly tipped with white; a white spot on the nape; quills dark brown, barred with ferruginous, and narrowly tipped with white, the inner webs barred with white as in the adult bird; tail deep clove-brown, spotted and tipped with white and barred with ferruginous; chin and throat buffy white, very closely barred with blackish; rest of the underparts warm buffy white, more openly barred with blackish, on the lower abdomen of a rather warmer buff tinge; iris brown.

Obs. The red immature plumage is, as a rule, to a large extent, if not entirely, exchanged at the first moult for the grey dress of the adult bird; or at least this appears to be the case as far as the male is concerned; but not unfrequently the female assumes a peculiar rufous plumage, which is retained during the following year; and in this plumage, which is excellently figured by Naumann (taf. 128. fig. 2), she differs considerably from the young bird; for the upper parts are rusty red barred with black, the rump nearly uniform pale rusty red, the head lighter and marked with white, the tail rusty red barred with black and having a broad black terminal band, the underparts white, rather closely barred with black, and the iris and feet are yellow. I am indebted to Mr. Blanford for a very fine female in this plumage shot near Shiraz, in Persia, in May 1870; and one, in my collection, shot at Hampstead, also in May, is in change between this plumage and the grey dress of the adult bird. In the red stage of plumage the bird has been described as a distinct species, under the names of *Cuculus rufus*, *Cuculus hepaticus*, and *Cuculus libanoticus*.

The young bird does not always have the red plumage above described, some specimens being much greyer than others. Naumann figures (taf. 129. fig. 1) one which has the head, neck, and upper parts blackish grey; but, though I possess several very grey young birds, I have never seen one so dark as this, and it is, I expect, a very rare variety.

The range of the Cuckoo is very extensive; for it occurs throughout the whole of Europe and North Asia up to the Arctic circle in the summer season, ranging south as far as South Africa and Southern India in the winter. In Great Britain it is very generally distributed from the south to the extreme north of the mainland, becoming rarer on the islands off the coast of Scotland. It arrives in the south of England from the middle to the end of April according to the season; but in the north of Scotland it does not appear before the early part of May, leaving again in August and September. Mr. Cecil Smith informs me that the Cuckoo is especially numerous on the island of Guernsey, more so perhaps than anywhere in the south of England; but it is quite numerous in most parts of England. Mr. Robert Gray says (B. of W. of Scotl. p. 200) that "it is distributed over the whole of Scotland. From its sylvan aspect and the temptation of its extensive and romantic glens, the west coast is peculiarly attractive to this bird. Shortly after its arrival, especially if the weather be auspicious, every glen and cultivated hollow are filled with its well-known call. In some of the glens near the banks of Loch Lomond as many as ten or fifteen of these lively summer birds may be seen within a short compass, uttering their note incessantly. It is also a well-known visitor to the Outer Hebrides. In the

summer of 1867 it was unusually plentiful, especially in Benbecula and the west side of North Uist. Even in the northernmost portion of the Long Island it is usually very common." Dr. Saxby says that it is a very rare visitor to Shetland, but he has obtained there young birds not fully feathered. In Ireland, as in England, it is a common and generally distributed summer visitant, appearing from the 16th to the 30th of April, and leaving from the end of June to the end of August, the young birds being the last to depart.

It does not appear ever to visit Greenland or Iceland, but has occurred in the Færoes. Herr Müller records one from the island of Naalsoe, July 1861, a second in July 1862; and an old male was shot near Kollefiord on the 16th June 1864. Throughout Scandinavia it is very generally distributed, and, Mr. Collett says, is to be met with all through West and East Finmark, but does not occur on the sterile foreshore and rocky islands of the extreme north. In Porsanger it is found as far out as Kistrand, in 70° 21′ N. lat., and is, indeed, met with in every wooded locality in Norway. He adds that he found it exceedingly abundant on Tromsö and in the valley of the Maalselv in June and July 1872. Pastor Sommerfelt, who records it from the Varanger fiord, states that it is not seen there every year. Sundevall says that it arrives in Sweden in May and leaves in August, the old males being said to leave first, then the females, and lastly the young, these often remaining till early in September. During the summer it is found in Finland throughout the country up to the arctic circle, arriving in the southern districts from the 6th to the 21st May, according to the season, and leaving early in the autumn. In Russia it ranges far north; for Messrs. Alston and Harvie-Brown speak of it as being very common near Archangel; and Mr. Sabanäeff informs me that during the summer season it is generally distributed throughout Central Russia in all suitable localities. It arrives in Poland about the 25th of April, and remains until the end of September, being there, as well as throughout North Germany, commonly and generally distributed. In Denmark, Mr. Collin says, it is common, and found throughout the country, but, curiously enough, it is most numerous on the treeless heaths or commons of Jutland and Schleswig. Throughout Holland, Belgium, France, and Portugal the Cuckoo is a common summer visitant, arriving in April and leaving again in August and September. De la Fontaine says that the hepatic form visits Luxemburg annually, generally in the spring, but usually in small numbers, and that the foresters and peasants believe it to be the female. It is found throughout Spain; and, according to Colonel Irby (Orn. Str. Gibr. p. 69), is "very plentiful near Gibraltar, especially in the cork-wood and on all hill-sides wherever there are any trees." He says, "I saw a great many at the top of the mountains at the back of Algeciraz at the end of May, but not beyond the line of trees. I first heard it on the 7th of April in 1868, on the 22nd March in 1870, on the 31st March in 1871, on the 29th March in 1872, and on the 30th of the same month in 1874. They remain till the end of July." In Italy, as elsewhere, Salvadori says, it is met with throughout the country, arriving in April and leaving in the autumn, and occurs annually on passage in Sicily, some few remaining there to breed; but Mr. A. B. Brooke states that he found it common on that island in the summer. According to Mr. C. A. Wright it is common in Malta in the spring and autumn, arriving rather later than the Wryneck, but, in general, preceding the Doves; and Lord Lilford states (Ibis, 1860, p. 234):—"It arrives in Corfu in small numbers in April, and remains a few days; occasionally seen on its return south in the early part of September. I

once saw a Cuckoo on the mainland in July." Dr. Krüper says that it is a very well-known bird in Greece, and breeds sparingly at high altitudes in the mountains. It usually arrives in April; and he heard it first in the Parnassus in 1865 on the 25th April, in 1866 on the 15th, and in Acarnania in 1869 on the 14th of that month. It breeds in May; and he always found its eggs in the nests of *Sylvia orphea*. In May 1873 he obtained a young bird in the Parnassus which had been brought up by a Stone-Chat, and saw one near Smyrna being fed by a Black-eared Chat. In the summer it avoids the plains. Throughout Southern Germany it is numerous during the summer; and Von Tschusi-Schmidhofen states that in the Riesengebirge it is to be met with above the bush-region. Messrs. Danford and Harvie-Brown also, who state that it is common in the woods, plains, and mountains of Transylvania, add (Ibis, 1875, p. 299) that "it is found even at the extreme limit of the wooded region, among the creeping pines." All along the Danube down into Turkey it is to be met with in the summer season, as also in Southern Russia, where it arrives in the latter half of April. Von Nordmann remarks that most of the rufous-plumaged or hepatic birds killed there in May and June proved on examination to be females. In Asia Minor the Cuckoo is common; and Dr. Krüper writes that he first observed it from the 25th of March to the 14th April near Smyrna, and in the autumn as late as the 21st September. In Palestine it arrived, Canon Tristram writes (Ibis, 1866, p. 283), much later than the Great Spotted Cuckoo. "We did not observe the common Cuckoo," he writes, "before the 30th of March. It is generally spread over the country, and, unlike its ally, is particularly abundant in the Jordan valley, where it is ceaselessly pursued with noisy clamours by the *Crateropus chalybeius*. The only egg of this Cuckoo we found was near Jericho, in the nest of a Desert-Lark, *Ammomanes isabellinus*." Mr. C. W. Wyatt saw the common Cuckoo twice early in April on the peninsula of Sinai, and says that a few days later it was common enough along the highlands of Edom. And it is also found in North-east Africa, where, however, Captain Shelley says, it is not common at any season. Von Heuglin states that in Egypt the Cuckoo arrives from the south in March, and he saw it until the early part of May. In August it is again on its journey back; and he shot an old male in the Bogos country as early as the end of July. "During my extensive journeys," he writes (Orn. N.O.-Afr. p. 780), "in Africa and Arabia I never heard the well-known cry of the Cuckoo, which it only utters in Europe during the pairing-season; and Jesse and Brehm say the same. But Professor Hartmann states the contrary; for he says he heard it March at Der, in Lower Nubia, in April near Old Dongolah, early in May in the woods of North Sennaar, in September near New Dongolah, and in October near Siut. In all specimens we examined in Africa we found the iris more or less of a deep brown colour, from dull brown to umber." In North-west Africa it is also tolerably common. Mr. Salvin met with it late in March near Sidi Youssef; and Loche records it as found in Algeria. Mr. C. F. Tyrwhitt Drake states that it arrives in Morocco in the spring; and, according to Favier (*fide* Colonel Irby, *l. c.*), it is "more abundant near Tangier than the Great Spotted Cuckoo; it is seen during passage in pairs, which cross to Europe in April and May, and return in August to winter, probably, in the interior of Africa. Some, however, remain during summer awaiting the return of the autumnal migration." Vernon Harcourt includes it in his list of birds occurring in Madeira; and Dr. C. Bolle states (J. f. O. 1857, p. 324) that it is said to have been heard in Fuerteventura. How far south it migrates in Africa it is rather difficult to determine.

Governor Ussher obtained one in Fantee, on Connor's Hill, Cape Coast, on the 2nd November, 1870; Weiss obtained one in St. Thomas; Andersson procured three at Objimbinque, Damara Land—one on the 31st March, 1861, the second on the 1st of April, 1864, and the third on the 6th February, 1865; and Professor Barboza du Bocage records it from Biballa, in West Africa. Julien Desjardins states (P. Z. S. 1832, p. 111) that the Cuckoo is common at Madagascar, and it is said to occur in Mauritius. Hartlaub has separated the Madagascar bird under the name of *Cuculus rochii* (*l. c.*), but, it would appear, without sufficient reason. According to Mr. E. Newton (Ibis, 1863, p. 453), however, the note of the Madagascar bird differs somewhat from that of ours.

In Asia the common European Cuckoo is found as far east as Japan; and, according to Dr. Meyer (J. f. O. 1873, p. 405), it has been met with as far south as Celebes. It is said by Dr. Severtzoff to breed throughout Turkestan; and Mr. Blanford writes (E. Persia, ii. p. 119) that it "abounds in parts of Persia, and must breed early. I saw a Cuckoo, and heard the well-known note repeatedly amongst the Baluchistan hills, in a region almost devoid of trees, in the months of February and March, at an elevation of from 2000 to 4000 feet above the sea. The first Cuckoo was heard near the Nihing river on the 18th of February. I scarcely think it probable, however, that these birds were breeding so early, or that they selected a place so singularly devoid of bird life in general as were the hills on the Nihing river. I am rather inclined to suspect that all seen in Baluchistan migrated about March to the Persian highlands; for after first meeting with them I observed few or none until after passing Karmán in the beginning of May. Thence to Shiraz they were common; and many doubtless breed on the wooded hill-sides and valleys of Fárs; for I procured one young bird in June, and Major St. John, at Shiraz, observed several in May, June, and July. Throughout the comparatively bare Persian table-land from Shiraz to Tehran I occasionally saw Cuckoos in and about gardens; but in the valleys of the Elburz Mountains, north of Tehran, they abounded to an extent I have never seen elsewhere. One or two birds appeared to haunt each one of the rows of poplars which are planted everywhere in the bottoms of the valleys where there is sufficient soil for cultivation." To this Major St. John adds that the Cuckoo probably remains in the southern parts of Persia during winter, for he heard one calling in the lower hills near the sea on the 25th of January, and shot one in the brown plumage at Kohrúd, 500 miles distant, 7500 feet above the sea, in the first week in April. Dr. Jerdon writes (B. of India, i. p. 322):—"It is found, though rarely, throughout all India. I procured a young specimen in N. lat. 11° at the Tapoor Pass; and I have seen it at Hyderabad, Nagpore, Mhow (where very abundant in the rains, frequenting bushes on grassy plains), Saugor, and in Goomsoor. Major Franklin states that it is common in Bengal; Sykes procured it in the Deccan, Tickell in Chota Nagpore; and I have lately seen and heard it tolerably common at Darjeeling. Blyth has occasionally obtained it near Calcutta, and an example in immature plumage recently at Moulmein in October; and it has been found, though rarely, in Ceylon. Its well-known call has given rise to its names in different languages; and the Lepcha name (*Ku-ku-pho*) nearly corresponds with the English. In Southern India it is only (apparently) a very straggling and rare visitor. In Central India it remains two or three months in the spring, and may breed, as its call has been heard by me at Goomsoor, Saugor, and Nagpoor in May and June; but I suspect that most of the birds that pass that way have

completed their task for the season in the hills, and then left them to straggle over the plains of the south." To this I may add that Mr. Layard says he obtained one near Colombo, in Ceylon.

In Northern Asia it ranges tolerably far north; but Von Middendorff states that it does not reach the Boganida, though he found it common on the Stanowoi Mountains, even up to the very top. He first heard its call on the 17th (29th) May on the Utsehúr river, about 500 versts south-east of the Amginskaja-Sloboda. Von Schrenck met with it along the Amoor, and says that, according to the Tymy-Giljaks, it is not rare on the island of Saghalien; and Dr. Radde speaks of it as being extremely numerous in Dauria, where it does not visit the bare elevated steppes nor the dense forest, but the edges of forests and bush-covered hills. In some parts, as near Kumara, this species and *Cuculus* (*Hierococcyx*) *sparveroides* are both met with; and in the Bureja Mountains both these species, as well as *Cuculus himalayanus* (which he calls *Cuculus optatus*), occur. It occurs in China, Père David says, in tolerably large numbers. He met with it on the Kiangsi, Setchuan, at Pekin, and in Mongolia, both in the plains and on the mountains. Its Chinese name at Pekin is, he adds, *Keu-kou*. Mr. Swinhoe says that it is a migrant at Amoy, arriving in autumn and spring and sojourning only a few days, but it breeds in Shanghai. He also obtained one near Taiwanfoo in September, but never heard or saw it on any other occasion in Formosa. I have examined a specimen from Japan, where it was obtained by Captain Blakiston and Mr. Whitely; and it is said by the latter gentleman to be common in summer at Hakodadi.

How far south in Asia the European Cuckoo ranges it is difficult to say; but, as above stated, Dr. Meyer records it from Celebes; and Blyth asserts (Ibis, 1870, p. 350) that a specimen from Eastern Timor is undistinguishable from examples of *Cuculus canorus*.

There are in Asia, besides our common European Cuckoo, two tolerably closely allied species, viz.:—*Cuculus himalayanus*, Vigors (P. Z. S. 1831, p. 172), which is also the *Cuculus canoroides* of Sal. Müller (Land- en Volkenk. p. 235, 1839–44), which differs from the common Cuckoo of Europe in having a stouter bill, in being smaller in size, the wing measuring only 7·0–7·25 inches in length, and in having the bands on the breast broader and more clearly defined. In Lord Tweeddale's collection are specimens from Darjeeling, the Karen hills, the Andamans, and Timor; and those from the Andamans have the bands much broader than in any of the others, whereas, on the other hand, one from Timor has the bands as thinly defined as in ordinary examples of *Cuculus canorus*.

Cuculus micropterus, Gould (P. Z. S. 1837, p. 137), resembles the broadly banded examples of *Cuculus himalayanus*, but may at once be distinguished by its tail, which, instead of being uniform blackish marked with white, is blackish brown, or dark brown with a conspicuous terminal black band.

In habits the Cuckoo is wild and shy, a tolerably swift bird on the wing, frequenting chiefly such places as are well covered with trees or groves; and so shy and watchful is it, that to approach within gunshot-range of it is generally most difficult. During the spring, however, it will at times forget its usual caution, especially when under the excitement usual at that season of the year; for I have seen my friend Mr. Sachse, by accurately mimicking the call of the bird, often bring a Cuckoo quite close to us. When flying over the open, it bears a good deal of resemblance to the Sparrow-Hawk or the Kestril; and it is frequently followed by various

small birds, who evidently hold it in great detestation, more especially in the breeding-season; and Naumann remarks that even the Orioles and Swallows will mob it. On the ground the Cuckoo is a somewhat ungainly bird, and progresses by means of short hops; but, as above stated, it flies well, and is much on the wing, though it does not appear to traverse long distances at once, but rests now and then, perching usually in the top of a tree.

The note of the male is the well-known call which is generally heard, and consists of two syllables *uh*, *uh*, rather than *ku-ku*, which, when the bird is greatly excited, is rendered *ku-ku-ku*; and besides this it utters a peculiar harsh note which somewhat resembles the syllables *Quawawa* or *Haghaghaghag*. . The female, on the contrary, has a quite different call, a sort of laughing note, uttered very quickly, like the syllables *Jekikickick* or *Quickwickwick*, which it preludes with a low harsh sound.

The Cuckoo feeds on insects of various kinds, and almost exclusively on these, though Naumann states that young birds will occasionally eat berries, especially those of *Rhamnus frangula*. It appears to be especially partial to the hairy caterpillars, and is a most useful bird; for it destroys large numbers of insects of various kinds. Mr. Collett informs me that in Norway he has found the stomachs of specimens examined by him to contain chiefly coleoptera, and only occasionally larvæ of the various species of *Bombyx*.

Count Casimir Wodzicki remarks (J. f. Orn. 1853, p. 297) that the Cuckoo is one of the most useful species in destroying the noxious *Bombyx pini*, an insect that has made such terrible ravages in the pine-woods of Continental Europe. "Not only does it eat its eggs," he writes, "but the caterpillar itself, and does not object to its strong hairs; for its stomach is capable of digesting with ease the most hairy caterpillars; and indeed the bird appears to have a liking for them. I recollect that in the year 1847 a pine-forest in the Pomeranian village of Darsin was threatened with destruction by these caterpillars, when it was suddenly saved by a large number of Cuckoos which were on passage, but remained a couple of weeks to enjoy the abundance of food; and in a very short time they so cleared the forest that the pests did not appear in the following year. It may be calculated that each bird destroys a caterpillar every five minutes; now, reckoning that it feeds all day, and calculating the day at fourteen hours, one Cuckoo would daily destroy 168, and a hundred Cuckoos 16,800 caterpillars. If half of these were females, and if each would, on an average, deposit only 500 eggs, a hundred Cuckoos would in one day prevent the production of 4,200,000 caterpillars, which would naturally effect a very considerable damage to the forests." Dr. Fritsch also states (J. f. O. 1876, p. 78) that he was informed by Mr. Zimmermann that on the island of Elbe, at Leitmeritz, the caterpillars of *Liparis chrysorrhœa* appeared in such quantities as almost to prevent the otherwise so-much-visited promenade from being used, when four pairs of Cuckoos put in an appearance, and began to clear away the caterpillars; and, owing probably to the abundance of food, they remained quite peaceably together. Mr. Zimmermann reckoned from observation that a Cuckoo would devour forty of these caterpillars in a minute. Macgillivray, speaking of the food of the Cuckoo, writes (Brit. Birds, iii. p. 119) as follows:—"The substances which I have usually found in the stomach of the Cuckoo were insects of various kinds, hairy caterpillars, and smooth larvæ; but I have also found in it vegetable matter. Thus, it is recorded in one of my note-books respecting a male examined in June 1836, that the cuticular lining of the stomach is 'smooth, soft, in this instance

without hairs, it being filled with vegetable fibres and blades of grass.' I have never met with a fragment of the elytra, the articulation of a limb, or any other hard part of an insect in the intestines, the contents of which are a uniform pulpy and impalpable mass of a light red colour. Of course the remains of insects in the stomach must be thrown up in pellets, as by Hawks and Owls. Hairs and other matters I have several times found in so great a mass as to distend the stomach nearly to its greatest capacity. It has been conjectured that the Cuckoo occasionally feeds on eggs, especially those of the small birds in the nests of which it deposits its own; but I am not aware of its having been caught in the act. It has also been accused of eating young birds; but no one has found bones or feathers in its stomach."

That the Cuckoo does not construct its own nest or rear its own young, is a fact that has been known from early ages; but the details respecting the mode in which its eggs are intrusted to foster-parents, the reasons wherefore it does not itself attend to the cares of incubation, and for the selection it makes of certain other species, especially songsters, to rear its young, have formed subjects for almost endless discussion. It would be, to say the least, unadvisable to comment fully on the various theories that have been propounded by different naturalists whose notes I have carefully perused in the compilation of the present article, amongst whom I may especially name the following, viz. Messrs. Altum, Baldamus, Bechstein, Brehm, Fredrich, Gloger, Von Homeyer, Müller, Naumann, Newton, Pässler, Dawson-Rowley, Von Tschusi-Schmidhofen, Walter, and Count Wodzicki; and I will only give as concisely as possible the result at which I have arrived from personal observation together with a careful study of the various articles on the subject.

The Cuckoo does not appear ever to live in monogamy; but the female permits advances promiscuously from several males, and lives in a state of universal concubinage or polyandry; indeed, instead of waiting until the male seeks her, she roves about the country in search of different lovers who will gratify her desires. In number the males of this species appear greatly to exceed the females; and the former have each their regular district, whereas the female will visit the districts inhabited by several males; and Dr. A. E. Brehm relates that a female which he watched in the neighbourhood of Berlin, and which was easily recognizable by a broken feather in her tail, used regularly to visit the districts inhabited by at least five males. The eggs of the Cuckoo are also deposited at considerable intervals; and this fact, together with its irregular matrimonial arrangements, fully explains, it appears to me, its reasons for not undertaking the cares of incubation. Mr. A. Walter, who has carefully collected what data he could on the subject, believes that a hen Cuckoo will lay four eggs in about three weeks, and that at least four days intervene between the deposit of one egg and the next succeeding one, sometimes, however, six or even seven days intervening. When a female enters the district inhabited by a male the latter so soon as he is aware of her presence exhibits the greatest excitement, utters his call-note loudly and frequently, being answered by the female, and chases her with the greatest ardour; and it not unfrequently occurs that two or three males are in full chase of a female, who entices them on and grants her favours to one after the other as they approach her, after which each male will return to his own district. It appears also that not only does the male return year after year to the same locality, but the female, though she wanders about in search of various lovers when pairing, seems to affect a particular district, where she deposits her eggs in the most suitable nests she can find; for peculiarly coloured or marked eggs of the Cuckoo, which are presumably

produced by the same bird, are generally found in the same district. I give below some notes from my friend Mr. Carl Sachse, which tend to prove this; and Mr. Walter states that he found three very peculiar small Cuckoo's eggs in Wrens' nests close to each other, the first nest being about thirty paces from the second, the second about twice as far from the third; and he found a fourth similar egg in a Whitethroat's nest which was built between the three Wrens' nests. The egg of the Cuckoo is deposited, not as is the case with many birds, early in the morning, but at various times in the day, not unfrequently in the afternoon; and it would seem that the bird does not wait until the egg is ready to be deposited before seeking for a suitable nest in which to place it, but she proceeds on a tour of investigation beforehand, and selects a suitable foster-parent, and when ready goes with all speed to place her egg there, being sometimes accompanied by a male bird, but more frequently not. Some observers state that the hen Cuckoo always destroys one or more eggs of the foster-parent; but this seems only occasionally to be the case, and more frequently when her egg is placed in an open nest—in which case she can sit on the nest to deposit her egg, and probably in sitting down will throw out some of the eggs which are already in the nest. It has also with justice been accused of devouring eggs; for my friend Mr. Sachse has seen one do so. Even after her egg has been deposited she has been known to revisit the nest and throw out eggs or young birds, never, however, her own; and the young Cuckoo will also, soon after it is hatched, evict its nest-mates from the nest. When the nest is an open one the Cuckoo will deposit her egg when sitting on the nest; but it frequently happens that the nest selected is so placed that she cannot possibly get at it except with her head, and the egg is then first deposited on the ground, and then taken into her bill and placed in the nest. A nest which is already tenanted is not always selected; for there are undoubted instances on record where a Cuckoo's egg has been found in a nest in which the foster-parent had not yet laid. It appears doubtful whether the female Cuckoo takes any further trouble about her egg, except that, as already stated, she has been known to visit the nest and destroy the eggs or young of the foster-parent. Von Tschusi-Schmidhofen gives, on the authority of a forester, Mr. Amort, an account of a Cuckoo, when a nest containing her egg had been taken, following the plunderer to his house and remaining near the house all the day; but I cannot help thinking that this account must be accepted with great caution, and I find no other similar account on record. Many theories have been propounded with regard to the reasons why the Cuckoo deposits its eggs in certain nests; and the most reasonable appears to me that the female Cuckoo will in preference deposit her egg in a nest of the same species as that in which she has been reared. But, at the same time, in case such a nest is not readily available, she will drop her egg in the first best nest that she can find; and this only can account for a Cuckoo's egg having been found in the nest of a Little Grebe. Salerne, in 1767, appears to have been the first to publish the theory, started by a native of Sologne, that in many cases the egg of the Cuckoo assimilates or bears some resemblance to the eggs of the foster-parent; and the notion has again more recently been independently brought forward by Dr. Baldamus, who, basing his data on the eggs in his own collection, remarks on the general similitude between the Cuckoo's eggs and those of the foster-parent. I have myself collected a considerable number of Cuckoo's eggs, together with those of the foster-parents, and have examined similar collections in many parts of Europe; and I must say that I have generally found this to be the exception and not the rule; for I calculate that not one of five or six Cuckoo's eggs resembles the eggs

amongst which it has been placed. Mr. C. Sachse, a most careful observer and field-naturalist, writes to me from Altenkirchen, near Coblentz, as follows:—"For many years I have taken note of the breeding-habits of the Cuckoo, and corresponded much with Dr. Baldamus on the subject, and have definitely arrived at the conclusion that the same female Cuckoo lays similarly-coloured eggs. In 1866 I found a Cuckoo's egg with four eggs of *Turdus merula*, which was coloured very abnormally, and strikingly like the egg of *Emberiza miliaria*; and fourteen days later I found in the immediate neighbourhood a similarly coloured egg in the nest of *Erythacus rubecula*. As these eggs were very abnormally coloured, and the Cuckoo is not a common bird here, I may judge with certainty that the same female laid them. I noticed a similar case last year, when I found similarly-coloured Cuckoo's eggs in the nests of the Chiffchaff and Willow-Wren; and Baldamus has often made like observations. I have also found very abnormally-coloured eggs in the nests of the Warblers, which greatly resembled the eggs of the foster-parents; still I cannot agree with Dr. Baldamus's theory that the Cuckoo is able to assimilate her egg to those of the species in whose nest she deposits it, because I have so frequently found them not resembling the eggs of the foster-parent." I may here remark, however, that Dr. Baldamus does not state that the Cuckoo can assimilate her eggs to those of the foster-parent, but merely says that she usually deposits her egg with those of some species which it most nearly resembles.

Professor Newton, in his article on the Cuckoo in the ninth edition of the 'Encyclopædia Britannica' (vol. vi. pp. 685–687), has given the latest *résumé* of what has been written on the peculiar breeding-habits of the present species; and, referring to what Dr. Baldamus has written on the subject, he remarks that "there can hardly be a doubt as to the truth of Dr. Baldamus's theory (the only theory, by the way, he has put forth) as to the object of the assimilation being to render the Cuckow's egg 'less easily recognized by the foster-parents as a substituted one.' But in this place it is especially desirable to point out that there is not the slightest ground for imagining that the Cuckow or any other bird can voluntarily influence the colour of the egg she is about to lay. Over that she can have no control; but its destination she can determine. It would seem also impossible that a Cuckow, having laid an egg, should look at it and then decide from its appearance in what bird's nest she should put it. That the colour of an egg-shell can be in some mysterious way affected by the action of external objects on the perceptive faculties of the mother is a notion too wild to be seriously entertained. Consequently only one explanation of the facts can here be suggested. Every one who has sufficiently studied the habits of animals will admit the tendency of some of those habits to become hereditary. That there is a reasonable probability of each Cuckow most commonly putting her eggs in the nest of the same species of bird, and of this habit being transmitted to her posterity, does not seem to be a very violent supposition. Without attributing any wonderful sagacity to her, it does not seem unlikely that the Cuckow which had once successfully foisted her egg on a Reed-Wren or a Titlark should again seek for another Reed-Wren's or another Titlark's nest (as the case may be) when she had another egg to dispose of, and that she should continue her practice from one season to another. It stands on record (Zool. 1873, p. 3648) that a pair of Wagtails built their nest for eight or nine years running in almost exactly the same spot, and that in each of those years they fostered a young Cuckow, while many other cases of like kind, though not perhaps established on authority so good, are believed to have happened. Such a habit could hardly fail to become hereditary, so that the daughter of a Cuckow, which always put her egg into a Reed-Wren's,

Titlark's, or Wagtail's nest would do as did her mother. Furthermore it is unquestionable that whatever variation there may be among the eggs laid by different individuals of the same species, there is a strong family likeness between the eggs laid by the same individual, even at the interval of many years; and it can hardly be questioned that the eggs of the daughter would more or less resemble those of her mother. Hence the supposition may be fairly entertained that the habit of laying a particular style of egg is also likely to become hereditary. Combining this supposition with that as to the Cuckow's habit of using the nest of the same species becoming hereditary, it will be seen that it requires but an application of the principle of 'Natural Selection' to show the probability of this principle operating in the course of time to produce the facts asserted by the anonymous Solognot of the last century and by Dr. Baldamus and others since. The particular *gens* of Cuckow which inherited and transmitted the habit of depositing in the nests of any particular species of bird eggs having more or less resemblance to the eggs of that species, would prosper most in those members of the *gens* where the likeness was strongest; and the other members would (*cæteris paribus*) in time be eliminated. As already shown, it is not to be supposed that all species, or even all individuals of a species, are duped with equal ease. The operation of this kind of natural selection would be most needed in those cases which occur the least frequently. Here it is we find it; for observation shows that eggs of the Cuckow deposited in nests of the Red-backed Shrike (*Lanius collurio*), of the Bunting (*Emberiza miliaria*), and of the Icterine Warbler, approximate in their colouring to eggs of those species—species in whose nests the Cuckow rarely (in comparison with others) deposits eggs. Of species which are more easily duped, such as the Hedge-Sparrow, mention has already been made." There is much in what Professor Newton has written that deserves the most earnest attention; and it is highly probable that, as he suggests, an hereditary tendency may be transmitted by a female Cuckoo to her posterity; but he appears to reckon only on this tendency being transmitted by the female. Would not the male also have some influence in this direction? And then the question arises as to how it would show itself; for the female Cuckoo is most irregular in her matrimonial arrangements, and has connexion not only with one male but with as many different lovers as she can conveniently visit during her peregrinations. Possibly this irregularity in the matrimonial arrangements of the Cuckoo may to some extent account for the very uncertain way in which the hereditary tendency (supposing such to exist) exhibits itself. Altogether the entire question is so enveloped in mystery that it naturally gives rise to numerous surmises, scarcely any of which can be satisfactorily gauged by a series of positively ascertained facts.

Mr. G. Dawson Rowley, and several other ornithologists, have given lists of the different species of birds to which the Cuckoo has been known to intrust her eggs; but I have found many other species recorded which do not seem to be included in any of these lists, and it may therefore be interesting to my readers to have as complete a list as I am able to make out. In so doing I take the opportunity of expressing my thanks to Mr. E. Bidwell, who had already made a manuscript list, purposing to publish it, which he has kindly lent to me. Those species in whose nests the eggs of the Cuckoo have been found in Great Britain are designated by an asterisk (*); and in every instance where the occurrence has not been recorded by at least three or four authors, the authority is given in brackets after the name.

Pica rustica (*Des Murs*).
Garrulus glandarius (*A. E. Brehm*).
Lanius excubitor (*A. E. Brehm*).
Lanius minor (*Benzon*).
*Lanius collurio.
Lanius auriculatus (*Benzon*).
*Muscicapa grisola.
*Turdus musicus (*G. T. Porrett*).
*Turdus merula.
*Turdus torquatus (*Small*).
Monticola saxatilis (*Wodzicki*).
Copsychus saularis (*W. E. Brooks*).
*Saxicola œnanthe.
Saxicola stapazina, *L.*, aurita *auctt.* (*Krüper*).
Saxicola rufa (*Thienemann*).
*Pratincola rubicola (*Crowfoot*).
Pratincola indica (*W. E. Brooks*).
Pratincola ferrea (*A. O. Hume*).
Pratincola caprata (*Hume*).
Pratincola rubetra (*R. Collett*).
*Ruticilla phœnicurus.
Ruticilla titys (*Dr. E. Rey*).
Daulias philomela (*Brehm*).
Cyanecula suecica (*Pallas*).
*Erithacus rubecula.
*Accentor modularis.
Acrocephalus arundinaceus (*Rey*).
*Acrocephalus streperus.
Acrocephalus palustris (*Rey*).
*Acrocephalus schœnobænus (*F. Bond, Rey*).
Acrocephalus aquaticus (*Dr. Thienemann, Opel*).
*Locustella nævia (*Bond, Opel*).
Bradypterus cettii (*Benzon*).
*Melizophilus undatus (*A. Crowley*).
Hypolais icterina (*Braune*).
Hypolais polyglotta (*Howard Saunders*).
*Sylvia rufa.
*Sylvia curruca (*Gloger*).
*Sylvia salicaria (*Brehm, Bond*).
*Sylvia atricapilla (*Bond*).
Sylvia orphea (*Krüper, Seebohm*).
Sylvia nisoria (*Rey*).
*Phylloscopus sibilatrix (*Rey*).
*Phylloscopus collybita.
*Phylloscopus trochilus.
Phylloscopus fuscatus (*Dr. Dybowski*).
Regulus cristatus (*Thienemann*).
Regulus ignicapillus (*Brehm*).
*Troglodytes parvulus.
Certhia familiaris (*H. E. Dresser*).
Parus major (*Brehm*).
*Motacilla lugubris.
Motacilla alba.
*Motacilla melanope (*Bond, Homeyer*).
Motacilla flava (*C. Bygrave Wharton, A. Benzon*).
Motacilla viridis (*Kricheldorff*).
*Motacilla raii (*Bond*).
Heterura sylvana (*Hume*).
*Anthus trivialis.
*Anthus pratensis.
Anthus cervinus (*Des Murs*).
*Anthus obscurus (*Bond*).
Anthus campestris (*Thienemann, Benzon*).
Anthus spinoletta (*Homeyer*).
Anthus jerdoni (*Hume*).
Anthus richardi (*Dybowski*).
*Alauda arvensis.
*Alauda arborea (*Brehm, Bond*).
Galerita cristata (*Rey*).
Calandrella brachydactyla.
Ammomanes isabellinus (*Dr. Tristram*).
*Emberiza schœniclus (*Brehm, Bond*).
*Emberiza miliaria.
*Emberiza citrinella (*Thienemann, Benzon, Bond*).
*Emberiza cirlus (*H. Saunders*).
Emberiza hortulana (*Collett, Dresser*).
Emberiza aureola (*Thienemann*).
*Fringilla cœlebs (*Collett, Graham*).
Fringilla montifringilla (*Wolley, Rowley*).
Passer domesticus (*Newton*).
Passer montanus (*Benzon*).
Ligurinus chloris (*Meves, Bond*).
Coccothraustes vulgaris (*Benzon*).
Serinus hortulanus (*Seidensacher*).
Pyrrhula major (*Des Murs*).
Linota linaria (*Des Murs*).
*Linota cannabina (*Bond*).
*Hirundo rustica (*G. Rooper*).
Turtur, sp.? (*Des Murs*).
Columba palumbus (*Willoughby, Brehm*).
Columba œnas (*Brehm*).
Podiceps minor (*L. Martin*).

The eggs of the Cuckoo vary considerably in coloration, as may be supposed from eggs of this species having been found to resemble those of various foster-parents. The usual form of egg is greyish white marked with greenish buff, not unlike some eggs of the common Whitethroat; but I have some which are not unlike a large Wagtail's egg, and others which, on a light grey ground, are finely mottled or spotted with pale reddish; and the egg in my collection, taken with those of the Tree-Creepers, is very pale greyish with a faint greenish tinge, sparingly blotched with pale greenish buff, and is rather above the usual run of Cuckoo's eggs in size; for, as a rule, the eggs of this species are very small in comparison with the size of the bird, averaging about $\frac{35}{40}$ by $\frac{27}{40}$ inch. I may here remark that I have seen a Cuckoo's egg of a very peculiar shade of bluish green. Messrs. Degland and Gerbe state that they have two pure white in colour; and Mr. R. Collett writes to me that he took one of a uniform bluish white colour with three eggs of *Pratincola rubetra*.

Mr. H. Seebohm, when in Hanover a short time ago, examined the splendid series of Cuckoo's eggs in the collection of Mr. Pralle, late of Hildesheim, in which are some most peculiar varieties. Mr. Seebohm has lent me his note-book, in which are copious notes respecting this collection, from which I extract the following, viz.:—"In this collection are twelve blue Cuckoo's eggs, some uniform, unspotted, whereas others have faint spots, like fly-spots, here and there. The first of these was in a nest of *Saxicola stapazina*, L. (*Saxicola aurita* auctt.), and is blue, with a few Bunting-like streaks; no. 2 was found with four eggs of *Ligurinus chloris*, and is blue, with a few fly-spots; nos. 3 and 4 are unspotted blue, and are each with five eggs of *Phylloscopus sibilatrix*; no. 5 is with three eggs of *Ruticilla phœnicurus*, and is also unspotted blue; no. 6 is with five eggs of *R. phœnicurus*, and no. 7 with three eggs of the same species, this latter egg being blue, with a few faint fly-spots; nos. 8, 9, 10, 11, 12 are all blue, with traces of spots, and are all with four or six eggs of *Ruticilla phœnicurus*, except the last, which was found with only one egg of that species. Amongst the other Cuckoo's eggs in the collection are several of considerable interest, but none in the nests of any other species beyond those in the above list; but I may remark that there are nine each with from one to five eggs of *Lanius collurio*."

The young Cuckoo almost as soon as it is hatched commences to evict the eggs or young of the foster-parent from the nest, and soon makes itself the sole tenant. In cases where two Cuckoo's eggs have been deposited in the same nest, and both have hatched out, a contest arises between the two birds, which ends by the summary eviction of the weaker of the two; hence when a Cuckoo has grown to any size it is always found to be the sole occupant of the nest. Dr. Jenner, the discoverer of vaccination, appears to have been the first to observe and record (in the 'Philosophical Transactions' for 1788) this fact. He states that he found the nest of a Hedge-Sparrow containing an egg of the Cuckoo and three of the Hedge-Sparrow, but the day following a young Cuckoo and a young Hedge-Sparrow, two of the eggs having disappeared: he "saw the young Cuckoo, though so late hatched, in the act of turning out the young Hedge-Sparrow. The little animal, with the assistance of its rump and wings, contrived to get the bird upon its back, and making a lodgment for its burden by elevating its elbows, clambered backwards with it up the side of the nest till it reached the top, where, resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. It remained in this situation

for a short time, feeling with the extremity of its wings, as if to be convinced whether the business was properly executed, and then dropped into the nest again. With these, the extremities of the wings," he continues, "I have often seen it examine, as it were, the egg and nestling before it began its operations; and the nice sensibilities which these parts seem to possess, seemed sufficiently to compensate the want of sight, which, as yet, it was destitute of. I afterwards put in an egg; and this by a similar process was conveyed to the edge of the nest and thrown out. These experiments I have since repeated several times in different nests, and have always found the young Cuckoo disposed to act in the same manner." He then states that its shape is well adapted for this purpose, as its back is very broad, with a depression in the middle, which is not filled up until it is about twelve days old. When two Cuckoo's eggs, he says, happen to be deposited in the same nest, a severe contest takes place between the newly hatched young, and continues till the weaker is rejected.

Macgillivray, who reproduces the above notes by Dr. Jenner, gives also (Brit. B. iii. pp. 128–131) some excellent field-notes communicated to him by one of his correspondents, which I transcribe as follows:—"In this part of the country the nest of the Titlark is the one almost invariably selected by the Cuckoos for depositing their eggs; indeed I have never seen them in any other. In Balgornie Moor, situate in the extremity of the parish of Bathgate, on Saturday the 19th of May, 1838, a pair of Titlarks finished their nest. The female laid an egg upon Sunday, Monday, and Tuesday. During one of these days a Cuckoo took the opportunity of dropping her egg amongst those of the Titlark. How she succeeded in doing this I know not, as the nest was built upon the side of a deep perpendicular ditch, the top of which was thickly covered over with strong heath in the shape of a dome, and the entrance into it was very narrow.

"Nearly the same period of incubation seems to be required for hatching both kinds of eggs. Upon Wednesday morning, the 23rd, the female Titlark began to sit upon the eggs, and upon that day fortnight, the 6th of June, they were all hatched. I saw them a short time after this had taken place. The young Cuckoo appeared to be about one third larger than the Titlarks, and of a dark colour. It was constantly gaping for food. Upon its back, from the shoulders downwards, was a peculiar depression, which I do not recollect having seen in any other young bird. On the afternoon of the 10th two of the Titlarks were found lying dead at the bottom of the ditch. The other one had disappeared.

"On Wednesday afternoon, the 13th, the feathers of this young bird had a strong resemblance to the prickles of the hedgehog, and it had grown so fast that it nearly filled the whole nest. When any thing touched it unexpectedly, as has been remarked by Mr. Blackwall, it threw itself back with considerable force. It was bold and fierce. When I put my finger near its bill it ruffled its feathers, stood upon its legs, struck at it with its wings, and even attempted to bite. For several hours I watched the motions of the foster-parents in order to ascertain whether they were still kind to the charge committed to their trust; and they continued to pay it the same unwearied attention. During the space of an hour they fed it generally ten or twelve times. The female occasionally remained in the nest several minutes. Both were exceedingly shy and cunning. So long as I was within sight of them they would not feed the

Cuckoo. I was therefore obliged to conceal myself in a plantation with the branches of the Scotch fir. When they brought food they always alighted at the distance of about fifteen or twenty yards from their nest, and stole softly amongst the grass at the bottom of the ditch, and now and then stood still and looked around them with a jealous glance to see if their motions were watched. So artfully was their retreat concealed, that no one to whom it was not pointed out would have had much chance of discovering it. As it was at a distance from my residence, I found it inconvenient to watch the habits of this Cuckoo so frequently as I wished. I therefore put it into the nest of a Titlark in my immediate neighbourhood, in which were five young ones about six days old, three of whom I allowed to remain. I went next day in the expectation of seeing the young Cuckoo lying dead. To my astonishment, however, the female was covering it most carefully with outstretched wings from a heavy shower of rain which was then falling. How she devoted her care to this surreptitiously introduced stranger, while her own young ones had in the meantime been expelled by the Cuckoo, and were at that moment lying lifeless within two inches of her nest, is a mystery in the economy of nature, which it would be extremely difficult to solve. I do not recollect having seen it mentioned in any book which I have perused that the cry of the Cuckoo when young resembles that of the Titlark. This, perhaps, was the reason why the foster-parents were so suddenly reconciled to their newly adopted nestling. They fed it most assiduously. On the afternoon of Thursday the 21st it pursued my fingers when I teased it, nine or ten inches beyond the nest, sparring with its wings, and crying like a Hawk. As has been noticed by Colonel Montagu, when about fourteen days old, the restless disposition of these birds appears to cease; for after that this Cuckoo suffered young birds to remain unmolested in the nest.

"From a hut formed of heath, within sixteen feet of the same nest, on Saturday the 30th of June, I made the following observations:—The male Titlark had disappeared for two or three days, having been in all probability destroyed by a Sparrow-Hawk, which had young ones in the neighbourhood. The female, notwithstanding the loss of her partner, continued to show to the Cuckoo the most unremitting kindness. Before she went to feed it she always alighted on the top of a Scotch fir, where she remained for some minutes looking anxiously around. She then flew down upon the ground at a distance of several yards from the nest, making zig-zag windings, and occasionally standing still. She brought to it sometimes snails, at other times a mouthful of large worms (some of them were more than three inches in length). One might almost have been inclined to believe that she was aware of the nature of the intruder and the voracity of its disposition; for I have never seen any of them bring such quantities of meat when feeding their own young. At the regularity with which she supplied its wants I am truly surprised. For nine successive hours, during which I had watched her, she gave it food exactly four times in each hour. I remained until nine o'clock. She, however, left off her maternal duties at a quarter past eight o'clock. In the morning she attempted to satisfy its craving appetite more frequently, generally seven or eight times within the hour.

"I shall now give you a short account of the manner in which the egg I lately sent you was discovered to have been deposited in the nest of the Titlark. In its size, tint, and markings it was the same as the one out of which the Cuckoo was hatched whose habits I have just now

described. Two sons of Mr. David Tripeny, farmer in Coxmuir, asserted to me that on Sunday forenoon, the 24th of June 1838, when they were sitting in a plantation tending their cattle, they saw a Cuckoo alight at no great distance from them upon a hillock of moss. It picked up an egg with its bill, and after having looked round about as if to ascertain whether there was any one in sight, hopped away with it amongst the heath. The lads immediately ran to the place into which they observed it descend; and when at a distance of about six feet they saw it rise from the side of a Titlark's nest, into which it had introduced its head. In the nest, which was arched over with strong heath, and had a narrow entrance from the side, there was a newly dropped Cuckoo's egg along with one of the Titlark's own. As I have no reason to doubt the accuracy of this observation, it confirms the statement of the celebrated Levaillant with respect to the Gilded Cuckoo (although the correctness of it is questioned by some)—namely, that she puts her eggs into different kinds of nests by conveying them with her bill—and satisfactorily accounts for the way in which the common Cuckoo, in some instances at least, is enabled to deposit her eggs.

"Two eggs of the Cuckoo are sometimes dropped in the same nest. One forenoon about the middle of June last, in the nest of a Titlark in my neighbourhood built amongst heath, and which contained three eggs, there were two Cuckoo's eggs. In this nest it was observed that the Cuckoo's eggs were hatched fully a day sooner than those of the Titlark. On the third or fourth day after this the young Titlarks were found lying dead on the ground, and the Cuckoos were in possession of the nest. They remained together in it nearly five days. On the morning of the sixth day, however, one of them had disappeared; and the other, which was the strongest, was brought up by its foster-parents until it was able to provide for itself. It is very probable that the young birds, which so soon disappear after they have been ejected from their nests, are carried away by mice, as these animals prowl about at night in pursuit of their food. I have heard the old Cuckoos crying during every hour of the day and night. They cease to emit their notes about the middle of July, and are seldom seen beyond that time. The young disappear about the middle or end of September."

It has been stated by Bechstein, as well as by several other authors, that when a young Cuckoo calls for food, not only its foster-parents but any other small birds that are near will bring food to it, preferring, if necessary, to supply its wants rather than to carry food to their own offspring; but other careful observers deny this, and affirm that, although the foster-parents will exert themselves to the utmost to satisfy the ever craving appetite of their unwieldy foster-child, yet any other birds will pass it with indifference, and should it be deprived of its foster-parents it would in all probability be starved to death.

The specimens figured are the adult male and young bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Hampstead, near London, May 20th, 1869 (*Davy*). *c*, ♀. Cookham, Berks, May 6th, 1869 (*Ford*). *d*, ♂. Cookham, June 9th, 1869 (*Godfrey*). *e*, ♂. West Drayton, June 20th, 1869 (*Paraman*). *f*, ♂.

Hampstead, May 4th, 1870. *g*, ♂. Hampstead, June 1st, 1870 (*Davy*). *h*, ♂. Pagham, Sussex, June 20th, 1870 (*R. B. Sharpe*). *i*, ♀ *juv.* Hampstead, September 19th, 1871 (*Davy*). *k*, *l*, *juv.* Gardsjö, Sweden (*Wheelwright*). *m*, ♀, var. *hepaticus*. Stockholm, June 8th, 1864 (*Meves*). *n*, *juv.* Archangel, August 1875 (*Craemers*). *o*, ♀ *ad.* Casa Vieja, Spain, May 6th, 1874 (*Col. Irby*). *p*, ♀ *ad.* Burgasskeuy, Turkey, May 27th, 1871 (*Robson*). *q*, ♂. Perdik, Asia Minor, April 8th, 1868 (*Robson*). *r*, ♂ *ad.*, *s*, ♀, var. *hepaticus*. Near Shiraz, Persia, May 1870 (*Blanford*). *t*, ♀ *ad.* Turkestan, July 13th (*Dr. Severtzoff*).

E Mus. C. A. Wright.

a, ♂, *b*, ♀. Malta, spring 1862 (*C. A. Wright*). *c*, ♂. Malta, April 1862 (*C. A. W.*). *d*, ♂. Malta, April 9th, 1870 (*C. A. W.*). *e*, *juv.* Malta (*C. A. W.*).

E Mus. Lord Tweeddale.

a, ♂. Objimbinque, Damara Land, March 31st, 1861 (*Andersson*). *b*, ♀. Simla, June 1875 (*Biddulph*). *c*, *d*, ♂. Karen-nee, March 1874 (*Wardlaw-Ramsay*). *e*, ♂. S. Yeddo, Japan, June (*Whitely*).

Genus COCCYSTES.

Cuculus, Linnæus, Syst. Nat. i. p. 169 (1766).
Coccyzus apud Audouin, Expl. Pl. Ois. d'Egypte, p. 266 (1825).
Coccysus apud Savi, Orn. Tosc. i. p. 154 (1827).
Coccystes, Gloger, Handb. Vög. Eur. p. 449 (1834).
Oxylophus apud Bonaparte, Comp. List, p. 40 (1838).

The Great Spotted Cuckoos differ quite sufficiently from the species belonging to the genus *Cuculus* to warrant generic separation. They inhabit the Palæarctic, Ethiopian, and Oriental Regions, only one species being found in the Western Palæarctic Region. In general habits they are not unlike the common Cuckoos; and, like them, they deposit their eggs in the nests of other birds, usually Crows or Magpies, and are peculiar in placing two or more eggs in the same nest. They are shy and wary, frequenting the same sort of ground as the common Cuckoo. Their call-note is a shrill chatter, quite unlike the call of *Cuculus canorus*. Their flight is steady and rather undulating; and they climb about on the trees with ease, but are clumsy and awkward on the ground. They eat insects of various kinds, and are said to feed largely on grasshoppers and locusts. Their eggs are not very variable, and may be compared to pale Magpies' eggs.

Coccystes glandarius, the type of the genus, has the bill broad at the base, compressed and decurved towards the tip, which narrows to a point; nostrils basal, elongated; head with a tolerably full, long, pointed crest; wings rather long, broad, and pointed, the first quill short, about equal to the ninth, the second rather longer than the fifth, the third longest; tail very long, much graduated; feet tolerably strong; the tarsus bare, covered in front with four large and three inferior scutellæ; toes, two directed forwards and two backwards; claws moderate, arched, acute.



GREAT SPOTTED CUCKOO.

COCCYSTES GLANDARIUS.

COCCYSTES GLANDARIUS.

(GREAT SPOTTED CUCKOO.)

The Great Spotted Cuckow, Edwards, Nat. Hist. Birds, pl. 57, p. 57 (1748).
Cuculus andalusiæ, Briss. Orn. iv. p. 126 (1760).
Cuculus glandarius, Linn. Syst. Nat. i. p. 169. no. 5 (1766).
Cuculus pisanus, Gm. Syst. Nat. i. p. 416 (1788).
? *Bee-cuckow* or *Moroc*, Bruce, Trav. App. p. 178 (1790).
? *Cuculus abyssinicus*, Lath. Ind. Orn. Suppl. p. xxxi (1801, ex Bruce).
Cuculus melissophonus, Vieill. Nouv. Dict. viii. p. 230 (1817).
Coccyzus pisanus (Gm.), Audouin, Expl. Pl. Savig. Ois. d'Egypte, p. 266 (1825).
Coccysus glandarius (L.), Savi, Orn. Tosc. i. p. 154 (1827).
Cuculus macrourus, Brehm, Vög. Deutschl. p. 153 (1831).
Cuculus gracilis, Brehm, tom. cit. p. 154 (1831).
Coccystes, Gloger (*C. glandarius*, L.), Handb. Vög. Eur. p. 449 (1834).
Oxylophus glandarius (L.), Bp. Comp. List, p. 40 (1838).
Coccystes glandarius (L.), Keys. & Blas. Wirbelth. Eur. p. 34 (1840).
Cuculus phaiopterus, Rüpp. fide Bp. Conspect. Gen. Av. p. 102 (1850).

Coucou-geai, *Coucou tacheté*, French; *Cucu rabilongo*, Portuguese; *Cucu real*, *Cucu del moño*, Spanish.

Figuræ notabiles.

Temminck, Pl. Col. 414; Edwards, *l. c.*; Werner, Atlas, Suppl. *Zygodactyles*, pl. 2; Gould, B. of Eur. pl. 241; id. B. of G. Brit. iii. pl. 69; Naumann, Vög. Deutschl. taf. 130. figs. 1, 2; Fritsch, Vög. Eur. taf. 13. fig. 12; Roux, Orn. Prov. pls. 67, 68; Savigny, Desc. de l'Egypte, pl. 4. fig. 2; ? Bruce, Travels, Appendix, pl. to p. 178.

♂ *ad.* pileo cristato et nuchâ sordidè cinereis, rhachibus nigris: dorso, alis, scapularibus et tectricibus alarum sordidè brunneis vix fulvido adumbratis, plumis plus minusve albo apicatis: uropygio et supracaudalibus cinereo lavatis et vix albido notatis: caudâ nigricanti-brunneâ, rectricibus omnibus, duabus centralibus exceptis, valdè albo terminatis: facie laterali pileo concolori: corpore subtùs albo, pectore vix isabellino lavato: rostro nigricanti-corneo, mandibulâ ad basin flavicante: pedibus plumbeis: iride fuscâ.

Juv. capite suprà et lateraliter et nuchâ nigricanti-brunneis: dorso, scapularibus, remigibus secundariis, tectricibus alarum, uropygio et caudâ ut in adulto, sed saturatioribus: remige extimo toto et secundo in pogonio externo sordidè brunneis, reliquis et secundo in pogonio interno ferrugineis, versus apicem fuscis et albo apicatis: corpore subtùs albo, gutture et pectore rufescente ochraceo lavatis.

Adult Male (Madrid, June). Crown and nape dull bluish grey, the shafts of the feathers being black, back, wings, scapulars, and wing-coverts dull earth-brown, in parts with a faint fulvous tinge; some of the primaries, the secondaries, wing-coverts, and the dorsal feathers here and there broadly tipped with

white; rump and upper tail-coverts dull brown, with a greyish tinge, here and there marked with white; tail much graduated, blackish brown, all except the two central rectrices broadly terminated with white; sides of the face similarly coloured to the crown; underparts white, on the breast and throat faintly tinged with isabelline, and the feathers on those parts having black shafts; bill blackish horn, under mandible yellowish at the base; legs and feet dull lead-colour; iris dull brown. Total length 16 inches, culmen 1·05, wing 8·2, tail 9·5, tarsus 1·30.

Young Male (Second Cataract of the Nile, February). Sides and top of the head and nape blackish brown, back, scapulars, wing-coverts, rump, and tail as in the adult bird, but darker; first primary dull brown, second brown on the outer web, remaining primaries with the second on the inner web rich rusty red, except towards the tip, where they are brown, finally tipped with white; secondaries as in the old bird; underparts white, on the throat and breast washed with rusty yellow; soft parts as in the adult bird.

Female. Similar to the male.

The present species inhabits South-western Europe (being but rarely met with in Southern and Eastern Europe), and Northern Africa, where it is common.

It has straggled as far north as Ireland, where it has once occurred. Thompson (B. of Irel. i. p. 364) gives the following information respecting the capture of this specimen, being the copy of a letter from A. Crichton, Esq., of Clifden, Connemara:—"The Cuckoo, pursued by Hawks, was taken by two persons, walking on the island of Omagh. It flew into a hole in a stone fence or wall, was caught alive, and lived for four days on potatoes and water. The inhabitants of this country had never seen any bird like it before; and as they are constantly in the habit of fishing at Bofin and Arran Islands, if the bird were to be met with, no doubt they would have recognized it. The bird when chased by the Hawks, appeared fatigued, weak, and emaciated, as though it had taken a long flight, as Woodcocks and other birds of passage do on first arrival. The month of March, 1842, is said to have been the time of its capture. On being sent to Dublin to be preserved, an excellent coloured drawing of it, the size of life, was kindly made by Miss Battersby, and forwarded for my acceptance: the plumage represented agrees best with that of the adult bird, as described by Temminck. The specimen has subsequently been obtained by Mr. Ball for the museum of Trinity College, Dublin. It is the only one known to have visited the British Islands." Since the above was written another specimen, however, has been obtained in the north of England, near Chiltrim Farmhouse, North Tyne, August 5th, 1870, as recorded in 'The Field,' September 3rd, 1870, and in Harting's 'Handbook of British Birds,' p. 123. Messrs. Degland and Gerbe do not cite any instance of its capture in Northern or Central France; and even in Provence it occurs very rarely, being generally met with in the spring; MM. Jaubert and Barthélemy-Lapommeraye record one specimen from Peyrelles, near Montpellier; and Crespon includes it amongst the rarer visitants to the Gard; Dr. Companyo records it as of occasional and very rare occurrence in the neighbourhood of Perpignan. In Portugal, according to Professor Barboza du Bocage, it is very rare; and Dr. E. Rey writes that during the time he was in Portugal he never heard or saw this bird, but had its eggs sent to him with those of *Cyanopica cooki*, and one was found in the empty nest of that species. In Spain it is common. I met with it near Aranjuez and Madrid; and Lord Lilford has a large series of specimens obtained in Spain. Mr. Howard Saunders says that it is more numerous at Aranjuez

than in the Cotos: he adds that he obtained it near Seville as early as March 2nd, and a female shot April 6th had an egg ready for exclusion. Major Irby says that it arrives earlier than *C. canorus*, and that it has once been seen on the Rock of Gibraltar in August. In Italy it is stated by Salvadori to be of very rare occurrence; and he considers the statement as to its breeding near Pisa utterly unworthy of credence. In Sicily, according to Professor Doderlein, it is also rare; but he records the existence of specimens in the Museums of Syracuse, Catania, and Messina. It has not been recorded from Sardinia. Mr. Traherne Moggridge (Ibis, 1864, p. 409) records it from Mentone; and Mr. C. A. Wright (Ibis, 1864, p. 50) writes that it is exceedingly rare in Malta, and he only knows of three specimens shot there. It is said to have once occurred in the Spreethal, Lausitz, in Germany; and Von der Mühle obtained one near Zakona, in Greece, in May, and says that it appears not to be uncommon there. Lindermayer purchased one in the market at Athens. It is said to occur rarely in Southern Russia; and Von Nordmann records one as having been obtained in Bessarabia. Canon Tristram met with it in Palestine, where, he says (Ibis, 1866, p. 281), he found it generally distributed, though never in great numbers, in the open glades of Bashan late in March. It has a wide range, visiting alike the forests of Gilead and the olive-yards of the western country; but he never saw it in the Ghor. In North-east Africa it is common; and, according to Captain Shelley (B. of Eg. p. 162), resident in Egypt and Nubia, and may be met with abundantly in the clumps of sont trees, usually in pairs or small family parties. They are by no means shy, and will often sit motionless on a bough while one walks beneath the tree. In Egypt they breed at the same time as the Hooded Crow, and invariably select a nest of that species in which to deposit their eggs. Petherick obtained it at Kordofan; and it occurs in Abyssinia, Tigreh, the Somali and Bogos countries, and on the White and Blue Nile. In Western Africa it is recorded by Loche as being common throughout the wooded districts of Algeria; and Mr. O. Salvin writes (Ibis, 1859, p. 318) that "the wooded hills on the south side of the Lake Djendeli, and in the neighbourhood of the Madracen, both which districts lie a little to the eastward of the high road between Constantine and Batna, may be considered as favoured breeding-localities of *Coccystes glandarius*." Mr. C. F. Tyrwhitt Drake found it common at Mogador, and obtained it at Tangier on the 15th January, and at Tetuan on March 15th. Messrs. Shelley and Buckley (Ibis, 1872, p. 286) procured it near Accra, on the Gold Coast; Verreaux records it from Senegal, Casamanse, and Bissao; and Mr. Gurney (Andersson's B. of Damara Land, p. 225) says that it is not uncommon during the wet season in Damara Land, and also about the river Okavango. Mr. Layard (B. of S. Afr. p. 251) speaks of it as being very rare within the Cape colony. All that he saw, three in number, came from Kaffraria. One was sent by Captain Bulger from Windvogelberg; and it appears in Chapman's collection not unfrequently. According to Bolle (J. f. O. 1854, p. 461) it is occasionally met with on the Canaries during migration. It does not appear to range further east than Persia, where Mr. Blanford obtained a specimen at Sarbestan, east of Shiraz, in June 1872.

In its habits the present species bears some resemblance to the common Cuckoo; and like that bird it is parasitic, never building its own nest or rearing its young. Its flight is steady and somewhat dipping; and its long tail renders it easily recognizable. As a rule, from what little I have seen of it I should consider it quite as shy as our common Cuckoo, if not more so. Lord Lilford, who observed this species near Madrid, writes (Ibis, 1866, p. 178) as follows:—"My

attention was first attracted by a shrill chatter, quite unlike the note of any bird with which I was acquainted; and on approaching the spot whence it proceeded, I descried four long-tailed birds hopping about an open space some sixty yards from me, and occasionally flying up into the surrounding trees. As far as I could make out they were engaged in catching and devouring grasshoppers, now and then diversifying this pursuit by a little love-making and a great deal of altercation. Their actions on the ground are very awkward and grotesque; but the flight is rather swift and well sustained, somewhat resembling that of the common Cuckoo. They were rather shy, and, on my showing myself, at once flew into the high trees, where I heard them for long pluming one another, and keeping up an almost incessant chatter." Mr. S. Stafford Allen, who met with it in Egypt, writes that "these birds generally occurred in pairs, frequenting the groves of Gum Acacia trees (*Acacia nilotica*), the 'Sont' of the Arabs, which line the banks of the Nile, both in Upper and Lower Egypt, where their presence was usually made apparent by the chattering, which I believe proceeds from the female. I was informed that the male has a note similar to that of the male of *C. canorus*; but this I never heard. When disturbed, they flew with a steady, dipping flight, the long tail being very conspicuous, alighting a little further on, and, if pursued, would slip quietly out of the opposite side of the tree to a fresh shelter. There is no perceptible difference between the sexes, either in plumage or in size; but the young bird just fledged is much darker in colour than the adult, becoming lighter with age."

Strictly parasitical in its breeding-habits, the Great Spotted Cuckoo in Spain usually selects the common Magpie (*Pica rustica*) as a foster-parent for its progeny, though sometimes the eggs are deposited in the nests of the Azure-winged Magpie; but in North-east Africa it invariably places its eggs in the nests of the Hooded Crow (*Corvus cornix*). In Portugal nests of the Azure-winged Magpie have been found with eggs of that species and one of *C. glandarius*; and I was assured when in Spain that this Cuckoo occasionally deposits its eggs in the nest of that species. This is also confirmed by Lord Lilford, who writes as follows:—"I merely mention for what it may be worth that I was assured by one of the keepers of the Coto de Doñana, an intelligent man, certainly well acquainted with both species, and who had no interest in lying on the subject, that in the neighbourhood of his native village Almonte the present species constantly lays its eggs in the nest of *Cyanopica cookii*—a statement which I unfortunately had no time to verify." Canon Tristram, Mr. J. H. Cochrane, and the late Mr. S. Stafford Allen have published many interesting details respecting the breeding-habits of the present species, all tending to show its parasitic habit, and also that, unlike *C. canorus*, the present species deposits more than one egg in the same nest. In many of the nests of *C. cornix* found by the two latter gentlemen containing eggs of *C. glandarius*, two eggs of the Cuckoo were found; whereas others contained only one. I was, however, assured by Manuel de la Torre, the royal keeper at Madrid, that he knew of instances where as many as four eggs of the Cuckoo had been found in one Magpie's nest. Mr. Stafford Allen remarks that where he has found the nests containing the young of the Hooded Crow together with the young of the Cuckoo, the latter were much more forward than the Crow's, and appears to think that the eggs of the Cuckoo require less incubation than those of the Crow, as in nests which contained eggs, the Cuckoo's eggs appeared to be fresher than those of the Crow. He also remarks that the Cuckoo never selects the nest of a Crow which is placed in an isolated tree.

Both Canon Tristram and Mr. Stafford Allen agree in stating that the present species has three distinct notes. The former gentleman writes that "its call-note is something like that of *C. canorus*, probably used by the male; its cry of alarm something between that of the Jay and the Roller; and its third note, '*Wurree, Wurree*,' from which it doubtless derives its Arab name, just as the common Cuckoo is called by them '*Tookook*;'" and Mr. Stafford Allen says that its notes are:—"the ordinary cry of the male, '*Kee ou! kee ou!*' a short, grating note of warning or alarm, uttered by the male when disturbed, '*Cark! cark!*' and a kind of angry chattering, that of the female, which I have heard answering the first-mentioned."

The food of the Great Spotted Cuckoo consists almost entirely of insects of various kinds, especially caterpillars, of which latter Mr. Stafford Allen found as many as twenty-four in one bird. It appears, however, also to some extent to indulge in eggs, as egg-shells have been found in its stomach on dissection. Probably when visiting the nest of a Crow or Magpie for the purpose of placing its egg there it may help itself to an egg or two.

The mode in which the present species, as well as the common Cuckoo, places its egg in the nest of the bird selected to act as a foster-parent to its progeny, has been the subject of some discussion; but, so far as I can judge, the balance of probability appears to be on the side of its taking its egg in its beak and placing it thus in the nest. I have certainly seen eggs of the common Cuckoo placed in nests into which the Cuckoo certainly could only have got its head and not its body; and Mr. Howard Saunders (Ibis, 1869, p. 401) writes as follows:—"The Great Spotted Cuckoo is far more abundant here [Aranjuez] than it is in the Cotos, depositing its eggs as there in nests of *Pica rustica*. The largest number I ever found in one nest was six of the Magpie with four of the Cuckoo; in others one or two was the number. Although I never actually saw the Cuckoo deposit its egg, yet I saw one fly past me which I feel sure had something like an egg in its gullet; from the side of another nest I saw the Cuckoo go off, leaving a broken Magpie's egg at the foot of the tree; and in the nest an egg of her own wet with yelk. As we came up her head was in the nest; and she fairly backed out, which she would never have done if it were her habit to lay her egg in the nest as ordinary birds do, in which case her head would have been looking outwards. It seems to be pretty positive proof that the Cuckoo flew to the Magpie's nest with her own egg in her mouth, deposited it there, took out one egg of the Magpie's, crushed it with her bill, and, dropping the fragments outside, returned to arrange her own egg comfortably in the place now vacant. If not, why does it constantly, I may say generally, happen that the Cuckoo's egg is smeared with yelk, whilst the remaining Magpie's eggs are as constantly clean? I also noticed that, when a Cuckoo was near, the Magpies could hardly be induced to leave their nests; whereas at other times there was no hesitation on their part. Any one who could give a week's attention to this point, could easily settle it by the aid of a good binocular glass, as the Magpies' nests are visible from a long distance, and the mode of deposit adopted by the Cuckoo could be easily distinguished."

Of the eggs of the present species I have a tolerably large series, sixteen in number, all obtained in Spain and Egypt. They somewhat resemble the eggs of the Magpie, but are much more delicately marked and paler in colour. The ground-colour is very pale blue, with a greenish tinge; and the markings, which are sometimes only small dots scattered over the surface of the egg, and at others tolerably bold blotches, are pale liver-brown, and tolerably bright reddish

brown. In size they vary from 1$\frac{14}{40}$ by $\frac{39}{40}$ to 1$\frac{8}{40}$ by $\frac{38}{40}$ inch, and have a smooth texture of shell, it being possible in most cases to distinguish them from the eggs of the Magpie by the feel only.

The specimens figured and described are an adult and young bird, both in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Madrid, June 1863 (*Sanchez*). *b.* Spain (*Verreaux*). *c*, ♂. Spain (*Lord Lilford*). *d*, ♂. Egypt (*Whitely*). *e.* Upper Egypt, spring of 1863 (*J. H. Cochrane*). *f*, ♂ *juv.* Egypt, March 20th, 1870 (*G. E. Shelley*). *g*, ♂ *juv.* Esna, second cataract of the Nile, February 1871 (*D. J. Morgan*). *h*, *i*, *pulli.* Spain (*Lord Lilford*).

E Mus. G. E. Shelley.

a, *juv.* Egypt, March 4th, 1868. *b*, ♂ *juv.*, *c*, ♂ *ad.*, *d*, *e*, ♀. Egypt, March 1870 (*G. E. S.*). *f*, ♂. Tangier, March 20th, 1870 (*G. E. S.*).

E Mus. Howard Saunders.

a, ♀. Coto del Rey, Spain, April 6th, 1869 (egg in oviduct). *b*, ♂. Coto del Rey, April 23rd, 1869. *c*, ♂, *d*, *juv.* Coto del Rey, May 28th, 1869 (*H. S.*). *e*, *juv.* Granada, June 1872.

Genus COCCYZUS.

Cuculus apud Linnæus, Syst. Nat. i. p. 170 (1776).
Coccyzus, Vieillot, Analyse, p. 28 (1816).
Cureus apud Boie, Isis, 1831, p. 541.
Erythrophrys apud Swainson, Classif. of B. ii. p. 322 (1837).
Coccystes apud Keyserling & Blasius, Wirbelth. Eur. p. 34 (1840).
Coccygus apud Lawrence, Ann. Lyc. N.Y. viii. p. 42 (1864).

The Cuckoos belonging to this genus are inhabitants of the Nearctic and Neotropical Regions, two species having been met with in the Western Palæarctic Region only as rare stragglers. Not only in structure do they differ materially from the Old-World Cuckoos, but also in habits. They inhabit well-wooded localities, and, though secretive, are not shy. Their flight is not unlike that of *Cuculus canorus*; and their note is a monotonous and guttural *ków ków ków* uttered low and plaintively. They feed on insects of various kinds, which they obtain chiefly amongst the foliage of the trees. In their mode of reproduction they differ greatly from our European Cuckoos; for, although they have been known to deposit their eggs in the nests of other birds, yet, as a rule, they build a slight nest of twigs, which they place on the branch of a tree, and incubate their own eggs. These are oval in shape, devoid of gloss, and pale blue in colour, with a faint greenish tinge.

Coccyzus americanus, the type of the genus, has the bill as in *Cuculus*, but longer and more curved; nostrils basal, rather large, and oval in shape; wings moderately long, broad, the first quill rather shorter than the seventh, the second nearly equal to the fifth, the third longest; tail of ten rectrices, long and graduated; legs rather strong, the tarsus bare, and covered in front with seven scutellæ; toes rather slender, two directed forwards and two backwards; claws moderate, curved, acute.



1. BLACKBILLED CUCKOO
COCCYZUS ERYTHROPHTHALMUS
2 YELLOW BILLED CUCKO
COCCYZUS AMERICANUS.

COCCYZUS AMERICANUS.

(YELLOW-BILLED CUCKOO.)

Cuculus carolinensis, Briss. Orn. iv. p. 112 (1760).
Cuculus dominicensis, Briss. Orn. iv. p. 110 (1760).
Cuculus americanus, Linn. Syst. Nat. i. p. 170 (1766).
Cuculus dominicus, Linn. tom. cit. p. 170 (1766).
Cuculus carolinensis, Wils. Am. Orn. iv. p. 13, pl. 28 (1811, ex Briss.).
Coccyzus, Vieill. (*Coucou de la Caroline*, Buff.) Analyse, p. 28 (1816).
Coccyzus pyropterus, Vieill. Nouv. Dict. viii. p. 270 (1817).
Coccyzus americanus (L.), Bp. Obs. Wils. no. 47 (1825).
Cureus americanus (L.), Boie, Isis, 1831, p. 541.
Cuculus cinerosus, Temm. Man. d'Orn. iii. p. 277 (1835).
Erythrophrys carolinensis, Swains. Classif. of B. ii. p. 322 (1837).
Erythrophrys americanus (L.), Bp. Comp. List, p. 40 (1838).
Coccystes americanus (L.), Keys. & Blas. Wirbelth. Eur. p. 34 (1840).
Coccyzus dominicus (L.), Baird, Proc. Ac. Phil. 1863, p. 64.
Coccyzus bairdi, Sclater, P. Z. S. 1864, p. 120.
Coccygus julieni, Lawr. Ann. N.Y. Lyc. viii. p. 42 (1864).

Figuræ notabiles.

D'Aubenton, Pl. Enl. 816; Werner, Atlas, Suppl. *Zigodactiles*, pl. 1; Gould, B. of Eur. pl. 242; Wils. Am. Orn. iv. pl. 13. fig. 1; Audubon, B. Am. pl. 275.

Ad. corpore suprà fusco-olivaceo vix metallico nitente, fronte cinereo tinctâ: remigibus intùs rufo-cinnamomeis: rectricibus centralibus dorso concoloribus, reliquis nigris albo latè terminatis, extimâ utrinque in pogonio externo ferè omnino albâ: subtùs albus: rostro superiore corneo, ad basin flavo, inferiore flavo-aurantiaco, corneo apicato: pedibus griseo-plumbeis: iride fuscâ.

Juv. adulto similis, sed caudâ subtùs griseâ, rectricibus minus albo terminatis.

Adult Female (Matamoras, Mexico, 29th July). Upper parts metallic olivaceous brown, tinged with ash towards the base of the bill; quills like the back, except that all but the two outer primaries are rich cinnamon-red from the base nearly to the tip, this colour becoming paler on the outside of the inner web; central tail-feathers like the back, the rest black, broadly tipped with white, the external rectrix with the outer web nearly all white; sides of the head to below the eye olive-brown, tinged with ash; underparts white, the sides of the neck faintly tinged with ash; upper mandible dark bluish horn, yellow at the base; lower mandible yellow, tipped with horn blue; legs light lead-blue; iris dark brown. Total length about 12 inches, culmen 0·95, wing 5·9, tail 6·2, tarsus 1·05.

Adult Male (Medina, Texas). Does not appreciably differ from the female above described, either in size or plumage.

Young. Differs from the adult in having the under surface of the tail grey, the white tips to the feathers smaller, and there is less rufous on the wings; but in this plumage they can easily be distinguished from the black-billed species by their yellow bill.

The present species is one of those birds that occasionally straggle to the shores of Great Britain from the American continent, and has only once been known to visit any other part of Europe. Up to the present time, so far as I can ascertain, it has only been met with on five occasions, four of which were included by Yarrell in his 3rd edition. The first of these individuals was obtained at Youghal, co. Cork, Ireland, in the autumn of 1825; the second was also killed in Ireland, near Bray, in co. Wicklow; the third was obtained in Cornwall, but the date of capture is not given; and the fourth was shot at Stackpole Court, Pembrokeshire, in the autumn of 1832. A fifth example, which was found on the 26th October, 1870, was picked up dead in a wood near Aberystwith by Mr. C. J. Williams, and was sent to me for examination by Captain Coscus, of Unys Hir House, Llandovery, into whose possession it had passed. This specimen, which was apparently a young bird, I exhibited at a meeting of the Zoological Society on the 18th April, 1871; and, as then remarked, it showed no signs of having been in captivity. On one occasion only does it appear to have been obtained on the continent of Europe; for, although M. Jaubert stated that two individuals had been killed in Southern France, yet, as Messrs. Degland and Gerbe pointed out, there is nothing to show that the birds in question really were Yellow-billed Cuckoos. The one specimen above referred to, making the sixth occurrence on record, was, M. A. Dubois states (Bull. Ac. Roy. Belg. xxxix. p. 9), killed on the 22nd October, 1874, at Bois-de-Lessines (Hainault), in Belgium, and is in the possession of M. C. Fontaine, of Papignies.

The home of the present species is in the Nearctic Region, where it has a tolerably wide range; for it is distributed from Canada down probably as far south as Brazil. Messrs. Baird, Brewer, and Ridgway say (N.-Am. B. ii. p. 478) that it "is distributed throughout North America, from Canada to Florida, and from the Atlantic coast to California." Mr. Benzon informs me that he possesses a specimen which was shot at Julianshaab, in Greenland, in 1874. Wilson met with it on Lake Ontario; and my brother informs me that he has shot it near Kingston on that lake, but that it was not so common there as the Black-billed Cuckoo. It breeds in New Brunswick; and Audubon states that he found it high up on the Mississippi river, on the upper branches of the Arkansas, and in Upper Canada, as well as in every State between these limits. Mr. Ridgway says (*l. c.*) that he once saw it, and heard it at other times, near Sacramento city, Cal., in June 1867. It was there rare, or at least not common, and found principally in willow-thickets. It was again met with in July of the same year along the Truckee river, in Nevada, where, also, it appeared to be very rare. When in Mexico and Texas, in 1863 and 1864, I found the present species by no means rare; and near San Antonio, in Texas, it was very common during the breeding-season. Dr. Sclater says, in his article on the genus *Coccyzus* (P. Z. S. 1870, p. 166), that he possesses specimens from Mexico, Jamaica, and Bogota; Mr. Salvin obtained it from Guatemala; Von Frantzius in Costa Rica; McCleannan in Panama; Mr. W. H. Hudson obtained an example at Juilines, Buenos Ayres, on the 21st April, 1870; and Dr. Sclater, who records this occurrence, adds that there can be little doubt that the bird obtained by Natterer in S. Paulo, Brazil, and referred by Von Pelzeln to *Coccyzus bairdi*, also belonged to the present species. It also occurs on the West-India Islands: Gosse says that it is a regular spring visitant to Jamaica, and

it has been recorded from Porto Rico; Professor Newton found it breeding in St. Croix; and Gundlach includes it as found in Jamaica.

When in Texas I was fortunate in being able to see the present species in a wild state, and to take several nests. Though not shy, it is watchful and somewhat secretive in its habits, and is not often seen; for it resorts to the more densely foliaged places, where it can the more easily escape observation. Its call-note, which, though monotonous, is not unpleasant, is well described by Nuttall as follows:—"The male frequently betrays his snug retreat by his monotonous and guttural *ków ków ków ków* or *koo koo koo koo*, and *kó kŭk*, *kó kŭk*, *koo koo koo kuk*, *koo kŏ koo*, *koo kŏ koo*, uttered rather low and plaintively, like the call of the Dove. At other times the *kow kow kow*, and *'tk 'tk 'tk 'tk 'tăk* or *'kh 'kh 'kh 'kh 'kah kow kow kow kow*, beginning slow, rises and becomes so quick as almost to resemble the grating of a watchman's rattle, or else, commencing with this call, terminates in the distant cry of *kow kow kow*. From this note, supposed to be most clamorous at the approach of rain, it has received in Virginia and other States the name of Rain-Crow and also Kow-bird. At various seasons, during the continuance of warm weather, the vigil *kow kŏw kŏw kow* of the faithful male is uttered for hours, at intervals, through the night. The same notes, but delivered in a slower and rather tenderer strain, are given with great regularity likewise in the day as long as the period of incubation continues. He often steadfastly watches any approach to the nest, going to it occasionally to assure himself that it is unmolested; and at times he may be observed darting even at the dormant Bat who accidentally seeks repose beneath the shady leaves of some contiguous trees; so that he is no less vigilant in seeking to ensure the security of his own progeny than in piratically robbing the nests of his neighbours."

Unlike our European Cuckoo, which intrusts its progeny to the care of a foster-parent, the Yellow-billed Cuckoo builds a slight nest, and attends to the incubation of her own eggs. Yet it would appear that at times she is inclined to throw the charge of her offspring on other birds. Alluding to this habit, Nuttall says, "I have found an egg of the Cuckoo in the nest of a Cat-bird; yet, though the habitation had been usurped, the intruder probably intended to hatch her own eggs. At another time, on the 15th of June, 1830, I saw a Robin's nest with two eggs in it indented and penetrated by the bill of a bird, and the egg of a Cuckoo deposited in the same nest." One peculiarity in the nidification of the present species is the fact noticed by Audubon, that its eggs are laid at intervals, and that, after those first deposited have been hatched, the warmth of the bodies of the young birds assists in the incubation of the later-deposited eggs. Audubon's observations on this subject are as follows:—"A nest, which was placed near the centre of a tree of moderate size, was reached by a son of the gentleman on whose grounds we were. One of the old birds, which was sitting upon it, left its situation only when within a few inches of the climber's hand, and silently glided off to another tree close by. Two young Cuckoos, nearly able to fly, scrambled off from their tenement among the branches of the tree and were caught. The nest was taken and carefully handed to me. It still contained three young Cuckoos, all of different sizes, the smallest apparently just hatched, the next in size probably several days old, while the largest, covered with pin-feathers, would have been able to leave the nest in about a week. There were also in the nest two eggs, one containing a chick, the other fresh or lately laid. The two young birds which escaped from their nest clung so

firmly to the branches with their feet that our attempts to dislodge them were of no avail, and we had to reach them with the hand. On looking at all these birds our surprise was great, as no two of them were of the same size, which clearly showed that they had been hatched at different periods; and I should suppose the largest to have been fully three weeks older than any of the rest. Mr. Rhett assured us that he had observed the same in another nest, placed in a tree within a few paces of his house. He stated that eleven young Cuckoos had been successively hatched and reared in it by the same pair of old birds in one season, and that young birds and eggs were to be seen in it at the same time for many weeks in succession."

The nests I have found in Texas, where the present species arrives about the middle of April, and immediately commences nidification, were very slight structures, resembling the nest of the Dove, and were built of dry twigs collected together so as to form a scanty platform, and lined, if lining it could be called, with a few grass-straws. The nests were usually placed on a large limb of an oak or mezquite tree; and one or two were built close to the house on the ranche where I so frequently stayed, on the Medina river. The full complement of eggs appeared to be four; but I see from the notes of ornithologists who have taken its nest in more northern localities that it there generally deposits five eggs. Professor Newton remarks that in a nest he took on the island of St. Croix the eggs were placed side by side in a row, *along* which the bird had been sitting; but I did not observe this peculiarity in the position of the eggs in any of the nests I took.

The eggs (of which I possess a tolerable series) are delicate light blue in colour, with a very slight greenish tinge, and some are clouded with white. This colour is very fugitive; but with care I have managed to keep some that I took in Texas so that they have scarcely faded since the day they were blown. In size they vary from $1\frac{5}{40}$ by $\frac{35}{40}$ to $1\frac{12}{40}$ by $\frac{38}{40}$ inch, are somewhat elongated oval in shape; and the surface of the shell is devoid of gloss, being almost chalky in texture.

The specimen figured, on the same Plate with the Black-billed Cuckoo, is an adult female, shot by myself at Matamoras, in Mexico, and is the bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. St. Stephen's, New Brunswick (*G. Boardman*). *b*, ♂. Washington, D. C., July 10th, 1859 (*Elliott Coues*). *e*, ♀. Matamoras, Mexico, July 29th, 1863 (*H. E. D.*). *d*, ♂. Medina river, Texas, May 15th, 1864 (*H. E. D.*).

E Mus. Salvin and Godman.

a. Barry's wood, Columbia, August 12th, 1859 (*Elliott Coues*). *b*. Hawes woods, Columbia, August 22nd, 1859 (*Elliott Coues*). *c*. Jalapa, South Mexico, 1872 (*De Oca*). *d*. Dueñas, September 1862 (*O. S.*). *e*. Dueñas, September 1864 (*O. S.*). *f*, ♂. Bogota, New Granada (*G. Crossther*). *g*, ♂. Medellin, Antioquia, U. S. C. 1876 (*F. K. Salmon*).

COCCYZUS ERYTHROPHTHALMUS.

(BLACK-BILLED CUCKOO.)

Cuculus erythrophthalmus, Wils. Am. Orn. iv. p. 16, pl. xxviii. (1811).
Coccyzus erythrophthalmus (Wils.), Bp. Obs. Wils. no. 48 (1825).
Coccyzus dominicus, Nutt. Man. i. p. 556 (1832, nec Linn.).
Erythrophrys erythrophthalmus (Wils.), Bp. Comp. List, p. 40 (1838).
Coccyzus erythrophthalmus (Wils.), Baird, B. N. Am. p. 77 (1858).

Figuræ notabiles.

Wils. *l. c.*; Aud. B. Am. pl. 276.

Ad. capite et corpore suprà sicut in *C. americano* coloratis, sed alis vix cupreo nitentibus: remigibus primariis in pogonio interno pallidè cinnamomeo lavatis: rectricibus dorso concoloribus, omnibus præter centrales albo terminatis et plagâ subapicali nigro-fuscâ notatis: corpore subtùs albido: gulâ pallidè flavo cervino lavatâ, gutturis lateribus et pectore griseo tinctis: caudâ subtùs griseo-cinereâ: rostro nigro, subtùs ad apicem cæruleo-corneo: iride fuscâ: marginibus palpebrarum sordidè coccineis: pedibus pallidè plumbeis.

Adult Male (Pennsylvania). Upper parts metallic olivaceous, with a faint coppery tinge on the wings; forehead tinged with ashy grey; inner webs of primaries faintly tinged with cinnamon; tail like the back, all but the central feathers slightly tipped with white, and having a subterminal dark brown mark; underparts white, the throat tinged with yellowish buff; sides of the throat and the breast tinged with grey; under surface of the tail-feathers hoary ash-grey; bill entirely black above, the lower mandible bluish towards the base; iris brown; round the eye a dull vermilion naked skin; legs light plumbeous. Total length about 12 inches, culmen 0·92, wing 5·65, tail 6·5, tarsus 0·95.

Adult Female (Kingston, Ontario). Closely resembles the above, but is, if any thing, a trifle smaller in size.

Some question may possibly arise with respect to the advisability of including rare stragglers in the European avifauna; and there is no doubt that not a few species have been included on but doubtful grounds, this being more especially the case as regards Great Britain. I think, however, that if there is no doubt that a species has been obtained on one or two occasions, and there is no probability of its being one escaped from confinement, and also if its range is such as to admit of its having been driven by stress of weather, or straggled to the locality where it has been obtained, that it is better to include and figure it than to pass it over in silence, as it may prove that other unrecorded occurrences have taken place; and attention having once been called to the species, it may be found to straggle to within the limits of the Western Palæarctic Region more frequently than has been supposed. The present species is one which comes in this category; for, so far I can ascertain, there are but two instances of its occurrence on record, in one of which it was at first supposed to be a Yellow-billed Cuckoo. The first recorded

specimen was killed near Lucca, in Italy, in 1857, and was examined and determined by Dr. Carl Bolle in the same year. The second example, obtained in Europe, killed at Killead, co. Antrim, Ireland, on the 25th September, 1871, was at first recorded by Mr. Blake Knox as *C. americanus*; but Lord Clermont (Zool. 1872, p. 3022) and Dr. Sclater (P. Z. S. 1872, p. 681) both proved that it was really a Black-billed Cuckoo.

The true habitat of the present species is America, where it is found from Canada down as far as Peru. It is stated by Audubon to occur during the breeding-season in the Canadas, Nova Scotia, and Southern Labrador; and Nuttall records it as found during migration in Newfoundland. It is found throughout the United States to the Indian territory in the west, beyond which it does not appear to have been met with on the Pacific side; and it breeds as far south as Georgia. In Texas it is said to be very rare; and I never met with it when collecting there. M. Sallé obtained it in Mexico, and McCleannan in Panama; Dr. Sclater received it from Bogota, Mr. Salvin from Guatemala; Mr. Lawrence records it from Costa Rica; and Mr. Hauxwell obtained it at Ucayali. Léotaud records it from Trinidad; and Dr. Gundlach states that it visits Cuba in the winter months, but is rare.

In habits the present species is stated to agree closely with its ally, the Yellow-billed Cuckoo; and, like that species, it constructs its own nest and incubates its own eggs. Mr. Nuttall says that it is less shy even than the Yellow-billed Cuckoo, and that he has observed near the nest with young the parent bird composedly sit and plume itself for a considerable time without showing any alarm at his presence. Dr. T. M. Brewer gives (N.-Am. Birds, ii. p. 485) the following details respecting its nidification:—"In all the instances in which I have observed the nest of this species I have invariably found it in retired damp places, usually near the edges of the woods, and built, not in trees, after the manner of the Yellow-billed Cuckoo, but in bushes and in low shrubbery, often not more than two or three feet from the ground. The nest, without being at all remarkable for its finish, or the nicety of its arrangement, is much more artistic and elaborate than that of the Yellow-bill. It is composed of twigs, roots, fine strips of bark, and moss, and is sometimes interwoven and partially lined with soft catkins of trees, and blossoms of plants. The eggs vary from three to six in number, and are often found to have been deposited, and incubation commenced on them, at irregular intervals, and to be in various stages of development in the same nest. I have hardly been able to observe a sufficient number of their nests to be able to state whether this species carries this irregularity as far as the Yellow-bill; nor am I aware that it has ever been known to extend its incubations into so late a period of the season. It is, if any thing, more devoted than the Yellow-bill to its offspring. Both parents are assiduous in the duty of incubation, and in supplying food to each other and to their offspring. In one instance, where the female had been shot by a thoughtless boy as she flew from the nest, the male bird successfully devoted himself to the solitary duty of rearing the brood of five. At the time of the death of the female the nest contained two eggs and three young birds. The writer was present when the bird was shot, and was unable to interpose in season to prevent it. Returning to the spot not long afterwards he found the widowed male sitting upon the nest, and so unwilling to leave it as almost to permit himself to be captured by the hand. His fidelity and his entreaties were not disregarded. His nest, eggs, and young were left undisturbed; and, as they were visited from time to time, the young nestlings were found to thrive under his

vigilant care. The eggs were hatched out, and in time the whole five were reared in safety." The eggs of the present species in my collection are smaller and much darker in colour than those of the Yellow-billed Cuckoo, and one or two are greener in tinge. The surface of the shell is rather smoother than in those of *C. americanus*, and has a slight gloss. In size they vary from $1\frac{3}{40}$ by $\frac{33}{40}$ inch to $1\frac{5}{40}$ by $\frac{34}{40}$ inch.

The specimen figured, on the same Plate with *C. americanus*, is the one above described, and is in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ad. Pennsylvania, 1864 (*G. A. Boardman*). *b*, ♀ *ad.* Kingston, Ontario, May 28th, 1873 (*Arthur R. Dresser*).

E Mus. Salvin and Godman.

a. Stone's Lot, Washington, September 22nd, 1859 (*D. W. Prentiss*). *b.* Guatemala (*O. S.*). *c.* Dueñas, October 1861 (*O. S.*). *d*, ♀. Medellin, Antioquia, U. S. C. (*F. K. Salmon*).

Order II. ACCIPITRES.

Suborder STRIGES.

Family STRIGIDÆ.

Genus STRIX.

Strix, Linnæus, Syst. Nat. i. p. 133 (1766).
Aluco apud Fleming, Brit. Anim. i. p. 57 (1828).
Ulula apud Jardine in Wils. Amer. Orn. ii. p. 264 (1832).
Eustrinx apud Webb & Berthelot, Orn. Canar. p. 8 (1841).

I have followed Mr. Sharpe (Cat. Strig. Brit. Mus. p. 1) in dividing the Owls into two families—Strigidæ and Bubonidæ, the first of which contains of European genera only the genus *Strix*, all the remaining genera being ranged under the Bubonidæ. This genus contains only one species, *Strix flammea*, whose range, habits, &c. are given *in extenso* in the following article.

This bird, which is the type of the genus, has the bill straight at the base, sharply decurved towards the tip, under mandible notched; nostrils oval, oblique, covered by rather stiff feathers directed forwards; facial disk large and complete; ear-conch very large, semicircular, with an anterior, erect, semicircular, subtruncate operculum; head smooth, with no ear-tufts; the wings long and broad, the second quill longest, the first and third about equal; tail short, even; legs long, rather slender, covered with short downy feathers to the base of the toes; toes strong and large, sparsely covered with a few bristly feathers, hind toe reversible; claws long, curved, acute, grooved underneath; middle toe serrated on the inner edge.



J. Keulemans lith. M&N. Hanhart imp.

BARN OWL
STRIX FLAMMEA

STRIX FLAMMEA.

(BARN-OWL.)

Strix aluco, Briss. Orn. i. p. 503 (1760).
Strix flammea, Linn. Syst. Nat. i. p. 133 (1766).
Strix alba, Scop. Ann. I. Hist. Nat. p. 21 (1769).
L'Effraie ou la Fresaie, Buff. Hist. Nat. Ois. i. p. 366, pl. xxvi. (1770).
Strix javanica, Gmel. Syst. Nat. i. p. 295 (1788).
Strix perlata, Licht. Verz. Doubl. p. 59 (1823).
Strix furcata, Temm. Pl. Col. livr. 73 (1827).
Aluco flammeus (L.), Flem. Brit. Anim. i. p. 57 (1828).
Strix guttata, C. L. Brehm, Vög. Deutschl. p. 106 (1831).
Ulula flammea (L.), Jard. in Wils. Amer. Orn. ii. p. 264 (1832).
Strix delicatulus, Gould, Proc. Zool. Soc. 1836, p. 140.
Strix pratincola, Bp. Comp. List, p. 7 (1838).
Strix americana, Aud. B. of America, i. p. 127, pl. 34 (1839).
Strix punctatissima, G. R. Gray in Darwin's Zool. of Voy. of H.M.S. 'Beagle,' iii. p. 34, pl. 4 (1841).
Eustrinx (Strix) flammea (L.), Webb & Berthelot, Orn. Canar. p. 8 (1841).
Strix poensis, Fraser, Proc. Zool. Soc. 1842, p. 189.
Stridula flammea (L.), Selys-Longch. Faune Belge, p. 60 (1842).
Strix bakkamana, Forst. Desc. Anim. p. 157 (1844).
Strix lulu, Peale, U.S. Expl. Exp. Birds, p. 74, pl. 21 (1848).
Strix pusilla, Blyth, Journ. As. Soc. Beng. xviii. part 11, p. 801 (1850).
Athene forsteni, Bp. Consp. Gen. Av. i. p. 42 (1850).
Strix glaucops, Kaup, Contr. Orn. 1852, p. 118.
Strix forsteri (Bp.), Hartl. Arch. Naturg. 1852, p. 30.
Strix africana, Bp. Rev. et Mag. de Zool. 1854, p. 540.
Strix adspersa, C. L. Brehm, Vogelfang, p. 40 (1855).
Strix margaritata, Paul de Württ. fide C. L. Brehm, ut suprà (1855).
Strix maculata, C. L. Brehm, ut suprà (1855).
Strix splendens, Hempr. fide C. L. Brehm, ut suprà (1855).
Strix flammea obscura, L. Brehm, Naumannia, 1858, p. 214.
Strix flammea vulgaris, L. Brehm, tom. cit. p. 215.
Strix flammea adspersa, L. Brehm, ut suprà.
Strix flammea guttata, L. Brehm, tom. cit. p. 216.
Strix paradoxa, L. Brehm, tom. cit. p. 217.
Strix kirchhoffii, L. Brehm, tom. cit. p. 219.
Strix flammea americana, Schlegel, Mus. Pays-Bas, *Striges*, p. 4 (1862).

Strix indica, Blyth, Ibis, 1866, p. 250.
Strix rosenbergii, Schlegel, Nederl. Tijds. Dierk. iii. p. 181 (1866).
"*Strix affinis*, Blyth," Layard, B. of S. Afr. p. 42 (1867).
Strix insularis, Pelzeln, J. f. Orn. 1872, p. 23.
Strix flammea, var. *pratincola*, Ridgw. N.-Am. B. iii. p. 11 (1874).
Strix flammea, var. *guatemalæ*, Ridgw. ut suprà (1874).
Strix flammea, var. *perlata*, Ridgw. tom. cit. p. 12 (1874).
Strix flammea, var. *furcata*, Ridgw. ut suprà (1874).
Strix flammea, var. *delicatula*, Ridgw. tom. cit. p. 13 (1874).
Strix flammea, var. *javanica*, Ridgw. ut suprà (1874).
Aluco delicatula (Gould), Sharpe in Voy. Ereb. & Terr. Birds, p. 22 (1875).

Effraye commune, French; *Coruja das torres*, Portuguese; *Lechuza*, Spanish; *Barbagianni*, Italian and Maltese; *Youka*, Moorish; *Schleiereule*, *Schleierkauz*, German; *Kerkuil*, Dutch; *Slörugle*, *Perleugle*, Danish; *Tornuggla*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 440; Temminck, Pl. Col. 432; Werner, Atlas, *Rapaces*, pl. 40; Kjærb. Orn. Dan. taf. 7; Frisch, Vög. Deutschl. taf. 97; Fritsch, Vög. Eur. taf. 11. fig. 4; Naumann, Vög. Deutschl. taf. 47. fig. 2; Sundevall, Svensk. Fogl. pl. 71. fig. 1; Gould, B. of Eur. pl. 36; id. B. of G. Brit. i. pl. 27; id. B. of Asia, pt. xxiv.; id. B. of Austral. i. pl. 31; Schlegel, Vog. Nederl. pl. 41; Roux, Orn. Prov. pls. 54, 55; Bettoni, Ucc. Lomb. pl. 36; Audub. B. of Am. pl. 34; Susemihl, Vög. Eur. taf. 46; Rowl. Orn. Misc. i. pl. xi.; Sharpe, Cat. Strig. pl. xiv.

Ad. pileo, nuchâ et corpore suprà cum tectricibus alarum pallidè aurantiaco-cervinis nigricanti-cinereo et albo guttatis et griseo variegatis: remigibus aurantiaco-cervinis, in pogonio interno extùs albidis, extùs indistinctè et intùs magis griseo fasciatis: caudâ albidâ, rectricibus centralibus aurantiaco lavatis et nigricante griseo transfasciatis: facie albâ, fasciâ aurantiacâ et griseâ circumdatâ, regione oculari rufescente: corpore subtùs albo vix nigro-griseo guttato: rostro albido: iride nigrâ.

Adult Male (near London). Upper parts generally pale or orange-buff, spotted with blackish grey and white, and varied with grey, the grey portion of the feathers being greyish white, finely vermiculated with dark grey; quills orange-buff or warm ochreous-orange, on the inner webs fading to dull white, the outer webs very faintly, and the inner ones more distinctly barred with blackish grey; tail dull white, on the central feathers washed with orange and crossed by four pale blackish grey bands, besides being sparingly speckled with grey; feathers forming the ruff white, tipped with orange and blackish grey; facial disk silvery white, the space immediately round the eye dull rufous, rest of the underparts white with a few blackish grey spots on the flanks, and sparingly tinged with orange on the breast; bill ivory-white; iris blue-black. Total length about 12·5 inches, culmen 1·3, wing 11·2, tail 4·8, tarsus 2·4.

Adult Female. Resembles the male, but is rather larger in size.

Adult Male, dark form (Kent, 24th February). Upper parts grey, closely vermiculated with blackish grey,

and spotted with black and greyish white; wings and tail much darker, and more boldly barred than in the pale form above described; facial disk white, tinged with orange, the space round the eye, especially on the inner side, blackish; underparts warm orange-buff, marked with clearly defined blackish grey spots.

Obs. The young bird is at first covered with white down, from which they pass into the first feather dress, which scarcely, if at all, differs from that of the adult. One young bird from Altenkirchen, in my collection, is half feathered, the new plumage being that of the pale form above described.

Subject to some variation, the Barn-Owl is one of the most widely distributed of our European Raptores; for it is a resident in most parts of Europe from Southern Scandinavia down to the Ethiopian Region, in which latter it is also found as far as South Africa. In Asia the Barn-Owl occurs throughout India to Burmah, and south to Australia; but it does not appear to inhabit China or Japan. In America the Barn-Owl ranges from the New-England States far down in South America. Here, again, we have, in the present species, a bird that varies so greatly that it becomes a question whether all the allied forms can be united, or whether it would be more advisable to keep them specifically separated. Mr. Ridgway, Dr. Coues, Professor Schlegel, and Mr. Sharpe, as well as several other naturalists, have so fully worked out the geographical range and variations to which this bird is subject, that my task is comparatively an easy one; and I may add that I have quite independently arrived at the same conclusion as my friend Mr. Sharpe, and have decided to unite all the closely allied forms; for I fully agree with what Mr. Sharpe writes in his British-Museum 'Catalogue' (Cat. Birds Brit. Mus. ii. p. 294), viz.:—"It will be seen from the above synonymy that I have united nearly all the Barn-Owls of the world under the one heading of *Strix flammea*. It is seldom that an opportunity is afforded to the ornithologist of examining such a fine series of birds as has been permitted to me in the case of the Barn-Owls; and it would be difficult to find a more comprehensive collection than at present exists in the British Museum. Every single variation of the ordinary type has been examined by me; and I have had in all cases one or two specimens of the rarer or more obscure forms on which to found my conclusions. Mr. G. R. Gray, in the 'Hand-list,' has recognized no less than twelve species; but a very short study will suffice to show that not one half of these species can be maintained. Mr. Ridgway also separates the Barn-Owls into different races; and he considers that seven can be differentiated. The first of these is *Strix flammea*, inhabiting Europe and the Mediterranean region of Africa. In America it is represented by *Strix pratincola*, the habitat of which is Mexico and Southern North America, the only character given by Mr. Ridgway being, however, its larger size. A difference of an inch and a half in the wing is the extreme variation that I can find, this measuring in European examples from 11 to 12·4 inches, in American ones from 12·9 to 13·7 inches. The latter have the tarsus measuring 2·65 to 3·01 inches against 2·2 to 2·5 inches in the European. The colour of the American bird is darker; and the dark phase, which is rarer in the Old-World birds, seems to be the permanent form in the New World. Indian Barn-Owls are rather darker than European, and clearer grey above, in the latter respect becoming more like the Australian *Strix delicatula*, whose pearly grey colour has been its chief specific character; sometimes, however, Australian examples are not to be distinguished from European: wing, in the latter, 10·8 to 11·3 inches, tarsus 2·4 to 2·6.

Mr. Ridgway then separates *Strix javanica* (from India and Eastern Africa) as a bird of the same colours as *Strix delicatula*. The African Barn-Owl, according to my experience, is always darker than the European, especially the specimens from Southern Africa; but they are again scarcely distinguished from the dark phase of *Strix flammea*. The Indian examples, on the contrary, run paler in colour, and are often nearly uniform grey on the back. In Java and the Malayan subregion a slight modification takes place, and the trace of zigzag markings on the breast, sometimes discernible in the Indian birds, becomes tolerably well pronounced, especially in *Strix rosenbergi*, which is a large form of *Strix javanica*, and is not allied to *Strix novæ-hollandiæ*. The same character divides Mr. Ridgway's *Strix guatemalæ* from *Strix pratincola* or *Strix flammea*; and this zigzag marking on the breast is extremely developed in the St.-Domingo Barn-Owl (*Strix glaucops* of Kaup). The Cuban and Jamaican bird is, at first sight, remarkable chiefly for its white tail; but in this respect it resembles British specimens, which, although matched by French birds, are quite different from any I have as yet seen from Germany. *Strix insularis* is a small dark form, supposed to be peculiar to the Cape-Verd Islands, but approached by some Senegambian specimens. It is closely allied to the Galapagoan *Strix punctatissima*. *Strix perlata* from South America is smaller than the North-American bird, and comes, therefore, very close to the European *Strix flammea*.

"My conclusion with regard to the Barn-Owls is, that there is one dominant type which prevails generally over the continents of the Old and New Worlds, being darker or lighter according to different localities, but possessing no distinctive specific characters. Insular birds vary, but cannot be specifically distinguished, as they can always be approached by continental specimens in a large series. Thus *Strix furcata* of Jamaica appears different, but is scarcely to be distinguished from Bogota specimens, which possess a white tail also. *Strix insularis* of the Cape-Verd Islands is scarcely to be separated from some Senegambian skins. *Strix glaucops* is not very different from Veraguan Barn-Owls; and these are again approached by Malayan specimens."

Although the variation in European specimens is not great as compared with the great differences in extreme forms from various other portions of the globe, yet it is by no means small, as can be seen even in the small series of examples in my own collection. One of these, from Pagham, has the upper parts very rufous, and but sparingly marked with grey, and the underparts pure silky white, unmarked; whereas others have the underparts more or less spotted, and the upper parts considerably more varied with grey and spotted. On the other hand, one from Kent, sent up in the flesh on the 24th February, 1876, has the upper parts grey, vermiculated with blackish grey, and profusely dashed with long black tear-shaped spots, and spotted with greyish white, there being no trace of rufous on the upper parts; the underparts of this bird are warm orange rufescent, profusely spotted with black; the facial disks are washed with rufous; and the region round the eye is blackish brown, this colour being more extended in the anterior portion. Another example, from Transylvania, obtained by Mr. J. A. Harvie-Brown, resembles this bird, but is much darker on the upper parts, and deeper rufous on the underparts.

In Great Britain the Barn-Owl is common and resident throughout England, Wales, and Ireland, but it becomes less numerous towards the north of Scotland. Mr. A. G. More says

(Ibis, 1865, p. 15) that it nests only occasionally in Ross and Caithness; and Mr. Harvie-Brown adds that the same remark may apply to Sutherland also. It breeds now and again on the south shore of Loch Assynt; and he saw it in August near Loch Inver and around the shores of Loch Letteressee, a branch of Loch Assynt. Low states that it used to breed in Hoy, but it has not recently been seen in the Orkneys; and Mr. Robert Gray only records it from Mull and Islay, in the Hebrides. It has not been observed in Shetland; nor has it been found in Iceland, the Færoes, or Norway; and until, comparatively speaking, lately it was only regarded as a very rare straggler to Sweden. Nilsson (Skand. Fauna, i. p. 134) only cites one occurrence, viz. that of an example shot on a vessel in the harbour of Ystad in October 1834; but Mr. Meves says that in the autumn of 1866 and spring of 1867 five were obtained, three of which are preserved at Malmö, and two at Lund; and Collin states that, according to Professor Wahlgren, it has of late years become more abundant in Skåne, and nests not unfrequently in the church-towers near Malmö. It is not found in Finland, and is but rare in Central Russia. Daniloff states that it is resident in the Orloff Government; but I do not find any mention of its occurrence in the Ural. In Poland it is said to be tolerably numerous; and in North Germany it is resident, though scarcely to be called abundant. When collecting in Pomerania I have seen both the light and the dark form; but, so far as I recollect, the white form is much the commoner of the two in Western Germany. One of the darkest I ever saw I obtained some years ago near Stettin; and as I mounted it instead of making a skin of it, I subsequently exchanged it away. Naumann describes the dark form, and speaks of the pale one as a variety.

In Denmark, according to Mr. Collin, the present species is resident, and abundant in some localities. He states that it occurs on Sylt and Föhr, Lolland Ærö, and Odense, and he found it breeding in Velflingo, Vigerslev, Sündersö, Torup, Broby, Skamby, Norup, and Krogsbölle churches. He further says that it has been noticed in Northern Jutland and Zeeland, and he has seen nearly full-grown young birds taken close to Copenhagen. In Holland and Belgium the present species is tolerably common and sedentary; and the same may be said respecting its occurrence in France and Portugal, where both the dark and light forms are met with. In Spain, according to Lord Lilford, Mr. Howard Saunders, and Colonel Irby, it is found throghout the year; and the last of these gentlemen states that it nests in the Moorish castle at Gibraltar. It is abundant at all seasons in Italy, Sicily, and Sardinia; and in Malta, according to Mr. Wright (Ibis, 1864, p. 49), "a few are to be seen at all seasons, for the most part about the battlements of Valetta and the Three Cities, where they breed in the ruined walls. Fresh arrivals appear to take place in spring and autumn. They are sometimes observed to strike at fish like an Osprey."

Dr. Fritsch records it from Bohemia; Messrs. Danford and Harvie-Brown met with it in Transylvania, where, they say, it is becoming gradually scarcer than it used to be; and I was told when on the Lower Danube that it occurs there; but Messrs. Elwes and Buckley did not observe it in Turkey. Von der Mühle states that he obtained one caught at Palamides, near Nauplia; but Dr. Krüper informs me that it has not been noticed of late years in Greece; and Lord Lilford also remarks (Ibis, 1860, p. 133) that he never saw or heard of it on the mainland of Greece, though it is common on the island of Corfu, where it breeds in the old fortifications about the town. In Southern Russia this Owl is rather rare than otherwise, occurring, as elsewhere, near habitations; but it is also occasionally found in the arid steppes. It would appear

to be seldom seen in Asia Minor, as neither Dr. Krüper nor Mr. Danford met with it there; but Canon Tristram obtained it in Palestine, where, he adds, it cannot be uncommon, as it is well known to the Arabs of Jericho, and also near the Lake of Galilee, under the name of "Boomeh abiad," or "White Owl."

Von Heuglin says that it is found at all seasons of the year throughout North-east Africa, but is more numerous in the mountains of Habesch and the primeval forest than in Egypt and Nubia. In Algeria it is said by Loche to be common; and this is confirmed by Mr. L. Taczanowski, who adds that those he saw had the underparts white. Favier (*fide* Colonel Irby, Orn. Str. Gibr. p. 56) writes:—"This Owl, resident near Tangier, is nearly as abundant as the Little Owl, inhabiting ruins and holes in rocks, and nesting twice a year, between April and November. They lay from three to four eggs. The inhabitants of Tangier consider this bird the clairvoyant friend of the Devil. The Jews believe that their cry causes the death of young children; so, in order to prevent this, they pour a vessel of water out into the courtyard every time that they hear the cry of one of these Owls passing over their house. The Arabs believe even more than the Jews; for they think that they can cause all kinds of evil to old as well as to young; but their mode of action is even more simple than that of their antagonists the Jews, as they rest contented with cursing them whenever they hear their cry. Endeavouring to find out from the Mahometans what foundation there is for the evil reputation of this species, I was told this:—'When these birds cry, they are only cursing in their language; but their malediction is harmless unless they know the name of the individual to whom they wish evil, or unless they have the malignity to point out that person when passing him; as the Devil sleeps but little when there is evil work to be done, he would infallibly execute the command of his favourite if one did not, by cursing the Owl by name, thus guard against the power of that enemy who is sworn to do evil to all living beings.' Having learned the belief of the Mahometans relative to this Owl, it was more difficult to find out exactly that of the Jews, who when questioned by me knew not how to answer, except that the act of pouring out water in the middle of the courtyard is a custom of long standing in order to avert the evil which the Owl is capable of doing; that is to say, the water is poured out with a view of attracting the Evil Spirit's attention to an object which distracts him, and so hides from him the infant which the Owl in its wickedness wishes to show him."

It inhabits the Azores, Madeira, and the Canaries. Mr. Godman says (Ibis, 1866, p. 94) that in the Azores it is "occasionally met with in the eastern and central groups. In Flores and Corvo I did not find any one who either knew the bird or the Portuguese name for it; hence I conclude it does not extend to the outer islands. Several people in St. Michael's and Terceira told me they had seen it; but I was unable to procure a specimen. The captain of a whaling-vessel told me that one flew on board his ship when about 500 miles south-west of the Azores. It was much exhausted; but he kept it alive on salt pork for three or four days." According to Dr. C. Bolle it inhabits all the Canarian islands, and he frequently saw it when traversing the rocky paths of the Barrancos at dusk. It is commoner in the lower regions than in the more elevated portions of the islands; and not far from Chasna there is a rock called "Risco de la Coruja" (Owl Rock), where its cry can be heard any night. Specimens from the Azores and Canaries are darker-coloured than continental specimens, but otherwise they do not differ. In

the British Museum there are three examples from the Cape-Verd Islands, which are, Mr. Sharpe remarks, very dark both above and below; and on one of them there is a decided trace of vermiculated cross bars. In West Africa it has been obtained at Casamanze by Verreaux, and by M. Marche at Ruffisque. Fraser procured it at Fernando Po; Monteiro on the River Quanza, Angola, from which latter country there are examples in the Lisbon Museum, obtained at Bengo, Ambaca, and Loanda. Señor Anchieta met with this Owl in Mossamedes; and Monteiro found it numerous about Benguela. According to Andersson (B. of Damara Land, p. 36), "South of the Orange River this Owl is exceedingly common; but north of that river it is a very scarce bird, though widely distributed over all the countries of which these notes treat." In the Cape colony it is, Mr. E. L. Layard says, common everywhere, breeding in the roof of nearly every farmhouse he entered. Mr. Rickard records it from East London and Port Elizabeth; Verreaux obtained it on the Knysna and at Hout Bay; Mr. T. E. Buckley procured a specimen at Bamangwato, in the Matabili country; there is one in the British Museum from the Transvaal; Dr. Dickinson (Ibis, 1864, p. 307) sent one from Quilimane, in the Zambesi country; and Dr. Kirk obtained one at Zanzibar. In Madagascar it is common; Messrs. Pollen and Van Dam noticed it everywhere in abundance in the forests which fringe the river Congoui, at the base of the Bay of Passandara, as well as in the little island of Sacatia, situated near Nossi-bé; and Messrs. Roch and Newton met with it at Antananarivo. The latter gentleman writes (Ibis, 1863, p. 339) respecting this bird as follows:—"By no means uncommon in the neighbourhood of Soamandrikazay. At dusk one was generally to be seen flying round the buildings of the cane-mill, or to be heard snoring, if it was too dark to see it. One moonlight night I saw three; but I was never fortunate enough to shoot one there. However, one very hot afternoon, the 24th of September, we were proceeding up a narrow tributary of the Hivondrona, when one of our men cried out 'Vorondolo!' and, to our astonishment, we saw a White Owl sitting in the full glare of the sun on a branch of a species of acacia, then totally devoid of leaves; and Mr. Maule shot it. It had the iris black, beak whitish, legs brown. I cannot detect any difference between this bird and those brought from Antananarivo by Mr. Caldwell, to whom I am indebted for the following interesting account of this bird at the capital, where it appears much commoner than I was last year inclined to believe (Ibis, 1862, p. 269). Mr. Caldwell had ample opportunities of observing it, having remained there upwards of two months. He writes as follows:—'The Owl's eggs (five in number) were brought to my house at Antananarivo for sale, in consequence of my having promised a reward for them. I then offered the man another dollar on condition of his bringing me in person to the nest he found, that I might see it with my own eyes. In a couple of days he returned, took me to the rock over which the Christians were formerly thrown, and led me along a ledge, when I was obliged to take off my shoes and stockings for fear of slipping. The face of the rock, when not precipitous, is covered with the prickly pear and scanty coarse grass. It was on this ledge that I got the second nest. The bird was sitting when I came up; and there were four eggs. The nest was *on the rock*, under a prickly pear, and the eggs barely separated from the rock by a little of the coarse grass which grew there. In fact, there appeared to be no attempt made to take any trouble in forming it. It was not in the dark, the opening or passage looking to the north-west, and the whole rather exposed than otherwise to the hot sun, which was powerful enough to make it very

unpleasant to walk bare-footed over the granite rock. As I was remounting the ledge to get to the narrow path I had come by (for I had gone down the slope about fifteen feet to get to the nest), I saw another Owl sitting on a nest exactly similar, and as the bird flew away knocked her down with a stick, and took the eggs also, four in number. It was about half-past three in the afternoon. I also disturbed several others, but could not get at their nests. . . . The Owls appear to roost all over the face of the precipice, at least a mile in length, on the western side of the capital, and go out at nightfall, cruising about the rock and over the town for a quarter of an hour. After that time they always flew straight away to the low country and rice-grounds to the west.'"

In Asia this Owl has also a tolerably wide range. Mr. Blanford did not meet with it in Persia; but Dr. Severtzoff records it from North-western Turkestan. Captain Jones obtained one in Mesopotamia, on the Euphrates expedition; and it is stated by Dr. Jerdon to occur throughout India, Ceylon, and Burmah. There is a good series of specimens in the British Museum from India. Mr. Holdsworth obtained it at Aripo, in Ceylon, where this Owl is, he says, very local, and confined to the north of the island. Lord Tweeddale received it from Tonghoo, in Burmah, where it is common and generally distributed; and Captain Feilden and Mr. Oates procured it in Upper Pegu. It does not appear to occur in China or Japan, but is found southward to Australia. It has been obtained in Java, Lombock, Flores, and Celebes; and in Australia Mr. Gould (B. of Australia, i. p. 67) observed it in almost every part of New South Wales that he visited. It is a common bird in South Australia, and he has seen specimens from Port Essington. It has not been found in the Swan-River colony, nor can it be included in the fauna of Tasmania. Canon Tristram, in his notes on a collection of birds from New Hebrides, says (Ibis, 1876, p. 260):—"The collection contains two specimens, with the remark, 'lives in woods and not much seen. Native name "Nalithmot."' The specimens in no way vary from others I possess from Australia, Fiji, and the Samoa Islands. I may mention in passing that, though the Pacific specimens I have seen are for the most part of a much purer white on the lower surface than the British *Strix flammea*, yet one from Samoa is as much spotted as many English specimens. The specimens are from Aneiteum." It inhabits also New Caledonia, the Friendly and Feejee Islands, the Samoa group, and the Sandwich Islands.

In the Nearctic and Neotropical Regions the Barn-Owl is found from Canada down to Peru. Dr. Brewer says that it is of rare occurrence north of Pennsylvania; but there is a specimen in the British Museum shot near Toronto by Mr. James Whitely. According to Dr. Coues (B. of N.W. Am. p. 299) this Owl is "an abundant bird on both sides of the continent, south of a certain latitude. Unlike many of its relatives, warmly clothed and of a hardy nature, withstanding great cold, it appears of rather delicate and sensitive organization. In the Missouri region it has only occurred to my knowledge in Kansas, where it breeds, though it is rarely found, according to Professor Snow. I ascertained its occurrence in Arizona; once, wading through a reedy lagoon at midday, I disturbed a Barn-Owl, which rose silently and flapped along till I brought it down. It is a common bird in California—apparently the most abundant species of its family in the southern part of the State; and, according to Dr. Cooper, it extends its range to the Columbia, in lat. 46°. Dr. Newberry observed an interesting modification of its habits by circumstances, which cause it to inhabit holes in the perpendicular cliffs bordering the

shore of San Pablo Bay. The same fact has been noted by Mr. Dall, in the case of *Brachyotus palustris*, in the Aleutian Islands; so that our Burrowing Owl is not the only species that lives in holes in the ground. In the Atlantic States the Barn-Owl is not abundant north of the Carolinas; I found it on the coast of North Carolina, in the salt marshes. It occurs, however, regularly, if rarely, in New York, Pennsylvania, and New Jersey. Dr. Turnbull observes:—'Not rare, and more frequent in spring and autumn. Its nest is generally found in a hollow tree, near marshy meadows.' Its occurrence in New England must be regarded as exceptional; and it has not been observed in that section further north than Massachusetts. In 1843 (Am. Journ. xliv. 253), the Rev. J. H. Linsley reported the capture of a specimen at Stratford, Conn. According to Mr. Allen, as above quoted, Dr. Wood took one at Sachem's Head, Connecticut, October 28th, 1865. The first specimen known from Massachusetts was procured near Springfield, in May 1866, as stated in my paper above quoted; another was shot near Lynn, in the the same State, in 1863, as recorded by Mr. Allen."

I obtained this Owl in Texas; and it is a tolerably common species on the Lower Rio Grande. It is also found in most parts of Mexico, in Costa Rica, Guatemala, Veragua, New Granada, Ecuador, Guiana, Brazil, La Plata, Chili, Peru, and the Galapagos Islands, and in the West Indies, in Cuba, Jamaica, and St. Domingo.

In concluding my remarks on the geographical distribution of this species, I may call attention to an excellent paper by Mr. R. B. Sharpe on the geographical distribution of the Barn-Owls (in Rowley's Orn. Misc. i. pp. 269–298, and ii. pp. 1–21), which contains very detailed descriptions of the various geographical races, and the fullest particulars respecting their range.

In habits the Barn-Owl is strictly nocturnal; for during the daytime it remains hidden away, sleeping in some dark corner or dense thicket, most frequently in an old ruin or a building where it is not likely to be disturbed, and less often in the hollow of a tree. So soon as the dusk of the evening sets in it begins to rouse up, and leaves its snug hiding-place to hunt after food, and is on the move, especially when the moon shines, until the day begins to break. It is fond of inhabited places; and so far from shunning the abode of man, it prefers the vicinity of houses when undisturbed and not subject to persecution. Its food consists of mice, rats, moles, large insects, and small birds, but more especially of various species of mice; and, owing to the large number it devours, it is deserving not only of toleration but of protection on the part of agriculturists, whose fields it often rids of these small pests. When in search of food, it quarters the ground most carefully, every now and again dropping down to pick up a mouse, or occasionally an insect. Small birds it takes from the roost; and it is said to kill cage-birds if left out during the night. It frequently inhabits dovecotes, and lives in apparent good fellowship with the pigeons. It has been accused, though wrongfully, of eating the young pigeons and sucking the eggs; for the best observers have never discovered any signs of the truth of this accusation, and, indeed, it is extremely improbable that it ever should suck eggs. Mr. Sachse informs me that, at a paper-mill near his place in Rhenish Prussia, as many as five Barn-Owls used to frequent an old dovecote and make use of it more especially as a storehouse for any mice they caught beyond what were required for immediate consumption; and once when he examined the dovecote he found six freshly killed mice neatly laid in a row close to the entrance-hole.

The call of the Barn-Owl is a loud, harsh, and most weird-sounding shriek, which is more frequently uttered during the pairing-season than at any other time; and early in the evening, when the bird commences its nocturnal peregrinations, the cry is most often heard. Besides this loud cry or shriek, the bird sometimes makes a sound which is scarcely distinguishable from the snore of a man when sleeping with his mouth open; and the young birds in the nest are said to utter this snoring sound also.

The Barn-Owl breeds later in the season than most of the other European Owls; for its eggs are seldom deposited before the middle or end of April, and more often in May; but it raises several broods in the year, and Waterton says that he once found a half-fledged owlet in the nest as late as December. Like many of its allies, this Owl occasionally deposits its eggs at intervals, so that young birds nearly fledged, quite small downy young, and eggs may be found in the same nest; and very probably the warmth of the young birds assists in the incubation. The number of eggs varies from three to six; and I once had as many as seven eggs taken from the same nest. In colour the eggs are pure white, rather dull, and devoid of gloss, somewhat elongated in shape; and those in my collection vary from $1\frac{11}{40}$ by $1\frac{5}{40}$ to $1\frac{26}{40}$ by $1\frac{9}{40}$ inch in size.

Referring to the breeding-habits of this Owl, my friend Mr. Carl Sachse writes to me as follows:—"On the 4th June, 1867, I found a nest in which was a young bird just hatched and five eggs, one of which was over three quarters incubated, another about half, one quite fresh—in fact, all in different stages of incubation. Sometimes the Barn-Owl nests in hollow trees near dwelling-houses, but here generally in barns, churches, and towers, on the walls under the eaves of the roof; and the eggs are placed without any sort of nest under them. In number they are from five to six. At some paper-mills near here a pair of Barn-Owls laid four eggs in a dove-cote; but the people there thought the Owls would eat the pigeons, and therefore caught and killed them. I have been assured on good authority that the sexton at Gummersbach, a small town near Cologne, took away the eggs from a Barn-Owl which was sitting in the church-tower there, and substituted hen's eggs, which the Owl took charge of and hatched out. So soon as the chickens were hatched they were taken away and brought up by hand; and the good man firmly believed that chickens hatched in this peculiar manner never scratch. On the next opportunity that presents itself I shall certainly try if the Barn-Owl really will hatch out hen's eggs."

When the young are hatched they are very plentifully supplied by their parents with food, especially with mice; and Waterton says that they will bring a mouse to the nest every twelve or fifteen minutes. As a proof of the number of mice they destroy, he says that in sixteen months a deposit of over a bushel of pellets had accumulated in an old tower which was inhabited by a pair of Owls, each of which pellets would contain from four to seven skeletons of mice.

The specimens figured are both British-killed, and are in my own collection, that in the foreground being an adult of the white form, and the bird in the background being the adult dark-coloured specimen from Kent above referred to.

In the preparation of the above article I have, besides the large series in the British Museum and at Norwich, examined the following specimens:—

E Mus. H. E. Dresser.

a. Near London (*H. E. D.*). *b*. Pagham, Sussex (*R. B. Sharpe*). *c*. Pagham, Sussex, September 3rd, 1869 (*Alfred Grant*). *d*. Kent, February 24th, 1876. *e*, ♂ *juv.*, *f*, ♀ *juv.* Altenkirchen, near Coblenz, August 28th, 1876 (*Sachse*). *g*, ♂ *juv.*, *h*, ♀ *juv.* Altenkirchen, near Coblenz, July 20th, 1876 (*Sachse*). *i*, ♀. Tangier, winter 1874 (*L. H. Irby*). *j*, ♀. Bogát-Mezöség, Transylvania, May 20th, 1874 (*Harvie-Brown*). *k*. Lebanon (*Stafford Allen*). *l*. San Antonio, Texas, 1864 (*A. L. Heermann*).

E Mus. C. A. Wright.

a. Malta (*C. A. W.*).

Family BUBONIDÆ.

Genus ASIO.

Asio, Brisson, Orn. i. p. 486 (1760).
Strix apud Linnæus, Syst. Nat. i. p. 132 (1766).
Noctua apud S. G. Gmelin, Nov. Comm. Petrop. xv. p. 447 (1771).
Otus apud Daudin, Traité d'Orn. ii. p. 213 (1800).
Asio apud Lesson, Man. d'Orn. i. p. 116 (1828).
Ulula apud Jameson in Wils. Am. Orn. i. p. 100 (1831).
Brachyotus apud Bonaparte, Comp. List, p. 7 (1838).
Ægolius apud Keyserling & Blasius, Wirbelth. Eur. p. 32 (1840).
Phasmoptynx apud Kaup, Trans. Zool. Soc. iv. p. 237 (1852).

The species belonging to this genus have all more or less developed tufts, and form a fairly distinct group, which has been subdivided by some authors into three genera—*Asio* (type *Asio otus*), *Brachyotus* (type *Asio accipitrinus*), and *Phasmoptynx* (type *Asio capensis*); but it appears to me most unadvisable to follow this course, as they are much better united into one genus. These Owls inhabit the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, three species being resident in the Western Palæarctic Region.

They are nocturnal in their habits, and seldom, if ever, seek their prey by day, when they remain concealed until late in the evening, commencing their peregrinations as soon as the twilight sets in. They frequent both wooded and open localities, are tolerably shy and wary; and some species are gregarious, whereas others are not so. Their flight is soft and noiseless, and they glide about as silently as ghosts. They feed on small birds, large insects, and small mammals, more especially on the last, of which they destroy large numbers. Their cry is a loud hoot, or a clear loud cry, which is uttered at night when they are flying about. They nest either on the ground or in trees, in the former case collecting together a little grass &c. to make a slight nest on which to place their eggs; in the latter case they take possession of and repair the deserted nest of some large bird, or of a squirrel. Their eggs are pure white and roundish oval in shape.

Asio otus, the type of the genus, has the beak stout, decurved from the base, under mandible notched; nostrils oval, oblique, concealed by stiff feathers; facial disk complete; conch of the ear large, with a semicircular operculum running the whole length in front, and a raised margin behind; auditory opening asymmetrical; head furnished with two distinct tufts; wings long and broad, first quill shorter than the fourth, the second longest, the third nearly equal; tail rather short, slightly rounded; legs moderate; the toes feathered to the claws; claws rather slender, curved, acute.



LONGEARED OWL.
ASIO OTUS.

ASIO OTUS.

(LONG-EARED OWL.)

Asio asio, Briss. Orn. i. p. 486 (1760).
Asio italicus, Briss. tom. cit. p. 491 (1760).
Strix otus, Linn. Syst. Nat. i. p. 132 (1766).
Le Hibou ou Moyen Duc, Buff. Hist. Nat. Ois. i. p. 342, pl. 22 (1770).
Otus albicollis, Daud. Traité d'Orn. ii. p. 213 (1800).
Otus italicus, Daud. tom. cit. p. 213 (1800).
Bubo otus (L.), Savigny, Syst. Ois. de l'Egypte, p. 49 (1810).
Otus asio, Leach, Syst. Cat. M. & B. Brit. Mus. p. 11 (1816).
Otus otus (L.), Cuvier, Règne Animal, p. 328 (1817).
Otus europæus, Steph. in Shaw's Gen. Zool. xiii. pl. ii. p. 57 (1825).
Otus vulgaris, Fleming, Brit. Anim. p. 56 (1828).
Asio otus (L.), Less. Man. d'Orn. i. p. 116 (1828).
Otus aurita, Rennie, in Mont. Orn. Dict. p. 262 (1831).
Otus communis, Less. Traité d'Orn. p. 110 (1831).
Otus sylvestris, C. L. Brehm, Vög. Deutschl. p. 121 (1831).
Otus arboreus, C. L. Brehm, op. cit. p. 122 (1831).
Otus gracilis, C. L. Brehm, op. cit. p. 123 (1831).
Aegolius otus (L.), Keys. & Blas. Wirbelth. Eur. p. 32 (1840).
Otus major, C. L. Brehm, Vogelfang, p. 42 (1855).
Otus minor, C. L. Brehm, ut suprà (1855).
Otus assimilis, L. Brehm, Naumannia, 1855, p. 270.
Otus verus, Finsch, J. f. Orn. 1859, p. 381.

Hibou vulgaire, French; *Mocho*, Portuguese; *Carabo*, Spanish; *Gufo comune*, Italian; *Waldohreule*, *Horneule*, *kleiner Uhu*, German; *Ransuil*, Dutch; *Skov-Hornugle*, Danish; *Hornugle*, Norwegian; *Hornuggla*, *Skogsuf*, Swedish; *Sarvipöllö*, Finnish; *Sech*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 29 & 473; Werner, Atlas, *Rapaces*, pl. 46; Kjærb. Orn. Dan. taf. vii.; Frisch, Vög. Deutschl. taf. 99; Fritsch, Vög. Eur. taf. 11. fig. 3; Naumann, Vög. Deutschl. taf. 45. fig. 1; Sundevall, Svensk. Fogl. pl. 25. fig. 1; Gould, B. of Eur. pl. 39; id. B. of G. Brit. i. pl. 31; Schlegel, Vog. Nederl. pl. 45; Roux, Orn. Prov. pl. 47.

Ad. corpore suprà ochraceo, fusco et albido tenuissimè variegato, et nigro-fusco striato: capite auriculato, plumis auricularibus nigricantibus margine exteriore testaceis, interiore albidis: remigibus primariis rufescenti-ochraceis, versus apicem griseis et nigro-fusco fasciatis: caudâ sordidè rufescenti-ochraceâ, fusco fasciatâ et vermiculatâ: facie pallidè ochrascenti-fuscâ et plumis ad basin albis nigro apicatis

circumcinctâ: corpore subtùs ochraceo, nigro-fusco striato: crisso et pedibus ad ungues plumis lanatis pallidè ochraceis immaculatis tectis: rostro nigricanti-corneo: iride aurantiacâ: unguibus saturatè corneis.

Adult Female (Sterlingshire, 30th March). Crown between the tufts and forehead ochreous varied with greyish white and brownish black, the feathers on the sides barred with the last colour, tufts, consisting of about seven elongated feathers, deep brownish black, on the inner margin greyish white, and on the outer margin ochreous; nape, hind neck, sides of the neck and upper part of the back ochreous, striped with tolerably broad brownish black streaks; back, rump, upper tail-coverts, secondaries, and wing-coverts ochreous, speckled and marked with blackish, greyish white, and brown; primaries, except towards the tip, brownish rufescent ochreous broadly barred with blackish brown, the terminal portion tinged with sooty grey and slightly vermiculated with greyish black; tail dull rufescent ochreous barred and slightly vermiculated with blackish brown; facial disk pale brownish with a faint ochreous tinge, the feathers on the inner side of the eye blackish; the ruff or frill round the disk white at the base and tipped with black; ear-coverts ochreous vermiculated with brownish black; underparts ochreous striped with brownish black; on the abdomen are a few indistinct and irregular bars; legs and toes uniform pale ochreous; bill dark horn; iris orange-yellow; claws horn-colour. Total length about 14 inches, culmen 1·1, wing 11·5, tail 5·9, tarsus 1·6.

Adult Male (Sterlingshire). Resembles the female, but is paler in general coloration. Culmen 1·1, wing 11·2, tail 5·9, tarsus 1·55.

Nestling (Rhenish Prussia). Head and neck covered with greyish dusky down; upper parts covered with fluffy pale ochreous grey feathers barred with dull brown; wings and tail, which are just appearing, as in the adult, but greyer, and but little tinged with ochreous; facial disk blackish brown margined with light brown; underparts dull light ochreous grey faintly barred with dull sooty brown.

The Long-eared Owl inhabits Europe generally, from the extreme south up to about 64° N. lat., and visits North Africa during the winter. In Asia it is found as far east as China and Japan, and as far south as North-west India.

In Great Britain it is very generally distributed in wooded localities and resident; but in the eastern counties its numbers are in the autumn augmented by migration. It appears to be less common in some localities than in others. Mr. Mansel-Pleydell says, "it is not a very common species in Dorsetshire, though, in Dr. Pulteney's time, it was frequently met with in the chase-woods, whence I saw a nest of owlets about eight years ago. There is a pair of adults preserved at Bryanston. I have seen them at Whatcombe and Houghton, but very rarely." Mr. Stevenson says that in Norfolk the numbers of those which remain to breed is considerably on the increase, owing chiefly to the spread of cultivation. In Western Scotland it is, Mr. Robert Gray says (B. of W. of Scotl. p. 56), "less common than the Short-eared Owl, and totally absent from the outer islands. It breeds, however, in Mull and Skye in limited numbers. In the cultivated districts of Dumbartonshire it is tolerably common, and in Ayrshire, Renfrewshire, and Argyleshire woods it is also well known; still, as a rule, it is more a bird of the eastern counties than of the western. Mr. Alston states that it is common in the Upper Ward of Lanarkshire; and in Stirlingshire it is said by Mr. Brown to be one of the commonest species. Yet, judging by the numbers sent to the city bird-stuffers, it is seldom met with, compared with other species."

It has been once recorded from Orkney by Baikie and Heddle; and Mr. Saxby says that one was obtained at Halligarth, in Shetland, on the 28th October, 1868, and a pair on the 3rd November, 1870, at the same place; a fourth specimen was sent to him by Mr. Thomas Edmondston, of Buness, in whose garden it had been killed in the winter of 1871. It is also common and resident in Ireland. It has not been met with in Greenland; but Professor Newton says (Ibis, 1864, p. 132) that Mr. Proctor received a single specimen from Iceland. Captain Feilden says that a specimen was shot at Eide on the 16th January, 1871, and another in March at the same place.

In Scandinavia it is tolerably common; and Mr. R. Collett informs me that it breeds throughout the southern and less elevated districts of Norway, but, as a rule, it is not numerous—though it is tolerably abundant in the districts about the Christiania fiord, in the districts near the coast in Christiania stift (as, for instance, in Nedenæs and on Listerland, and at Christiansand), but does not appear along the west coast. In the interior it breeds not uncommonly in Land and Valders, and ranges north up to the Trondhjemsfiord district, where it is resident in the Œrkedale.

Professor Sundevall says that it is common and resident in Southern Sweden, and occurs regularly up to 60° or 61° N. lat., but is very rare further north. There is, however, a specimen in the Stockholm Museum which was shot near Luleå in July 1835. In Finland it is, Von Wright states, very rare, and occurs only in the southern portions of the country; and Mr. Sabanäeff informs me that it is common in Central Russia, especially in the Tula Government, but it does not range far north. On the eastern slopes of the Ekaterinburg Ural he found it extremely numerous, and he believes that it ranges there as far north as 59° N. lat. Throughout Germany it is generally distributed and tolerably common in suitable localities, being a partial migrant, and, Borggreve states, found in flocks in the winter season. Professor Kjærbölling says that it is found in Denmark at all seasons of the year, but is far more numerous in the winter, at which season its numbers are augmented by arrivals from the north. It breeds in many parts of Denmark proper, as well as in the Duchies. I have met with it in the portions of Western Germany which skirt the Rhine; and it is common in the wooded districts of Belgium. Professor Schlegel states that it breeds in Holland, in Gelderland and North Brabant; and it is found throughout France in wooded localities, being common and resident. Professor Barboza du Bocage records it from Portugal; and in Spain it is also found, but appears to be somewhat rare in the south; for Colonel Irby says that he never obtained it near Gibraltar, but that it is more common towards Cordova and Granada. He only met with it once in winter, in the Coto del Rey. Mr. Howard Saunders informs me that it breeds in the more elevated districts in Spain, such as the neighbourhood of Granada, where he obtained nestlings. In the wooded districts of Savoy it is common, descending to the lower plains in autumn; and the same may be said of its occurrence in Italy; but it is rare in Sardinia, though found more commonly in Sicily. Mr. C. A. Wright records the occurrence of several examples in Malta, and says (Ibis, 1870, p. 489) that during the two or three previous years he noticed several examples in the market at both periods of migration. Lord Lilford speaks of it as being common in Corfu; and he shot one and saw four or five more on Mavronoros, a mountain near Livitazza, in Epirus. In Greece, Dr. Krüper says, it occurs not unfrequently on passage and during winter; but he does not think

that it ever remains there to breed. In Southern Germany it is tolerably common at all seasons of the year. I found it breeding near Cilli, in Styria; and Dr. A. Fritsch says that it breeds in the conifer-woods of Bohemia, and is common in winter in the flat localities, sometimes occurring in flocks of from twenty to thirty individuals. In the wooded districts in the countries bordering the Danube it appears to be not uncommon, and is stated to occur also in the wooded districts of Southern Russia, being met with, Professor von Nordmann says, near Odessa at all seasons of the year. It doubtless occurs in Asia Minor; but I have no details thence. In Palestine it is not of common occurrence, and only found in the wooded districts and highlands. It is found in North-east Africa, being, Captain Shelley believes, a resident in Egypt; and Dr. von Heuglin says that it is not rare in winter in Egypt and Arabia Petræa, but does not appear to occur there every year. He obtained one near Alexandria late in March 1851. It is also met with in North-western Africa, being, Loche says, met with throughout the wooded and mountainous portions of Algeria; but the English travellers who collected there do not appear to have met with it; and Favier does not record its occurrence in Tangier. It is, however, dispersed throughout the Atlantic islands, though it is nowhere abundant. Mr. Godman, who records it from the Azores, says that it inhabits the eastern and central groups. He obtained one procured at Fayal, and he frequently heard of it in St. Michael's; but it is nowhere common, and he never met with it living. Dr. C. Bolle also states (J. f. O. 1854, p. 450) that it occurs in the wooded districts in the Canaries; and Mr. Godman says that it is occasionally found in Madeira, where it probably breeds.

To the eastward it is found as far as China and Japan. Ménétriés obtained it in the forests of Lenkorán. Mr. Abbott obtained it at Trebizond, and Major St. John near Shiraz. Mr. A. O. Hume says (Rough Notes, p. 363) that he has received a specimen killed at Bhoondsee, Zillah Gourgaon, and another from near Hansee, both killed in the cold weather. They are far from uncommon about Darjeeling, at any rate during the early part of the cold weather. Whether they remain in the Himalayas throughout the year he is unable to say; but he received a specimen killed near Narkunda in June; and Dr. Stoliczka notices their being found in the forests near Nachar. Dr. Jerdon states (B. of India, i. p. 126) that it has "only been found in the Himalayas from Nepal to Cashmere, and but rarely, more common perhaps towards Afghanistan;" and he further writes (Ibis, 1871, p. 345) that he has found it by no means rare in the cold weather from near Delhi throughout the Punjab. Dr. Severtzoff says that it is found throughout Turkestan during passage, but is very rare at any other season of the year; and it is recorded from Siberia by the Russian explorers who visited that country. Von Middendorff shot one at Udskoj-Ostrog on the 7th August; Von Schrenck obtained it on the Lower Amoor, close to the mouth of the Ussuri, in September; and Dr. Radde states that he saw numbers in the Bureja Mountains, during passage, late in September. In April 1856 he observed it here and there in the elevated steppes of Dauria, and shot one on the 21st April at the Tarei-nor. He never found it breeding; but, according to Mr. Taczanowski, Dr. Dybowski records it as breeding in the vicinity of Darasun, in Dauria. Mr. R. Swinhoe records it from Tientsin, in China, and says that it is more or less common in many parts of that country; and Mr. Whitely obtained it at Hakodadi, in Japan. In the Nearctic Region it is replaced by a closely allied species, *Asio americanus*, which, though separable from our European bird, so closely resembles it that it can

scarcely be looked on as a distinct species. It differs in having the upper parts darker and more clouded, and the underparts marked with but few longitudinal and many transverse stripes.

The Long-eared Owl is almost strictly nocturnal, or is only in exceptional cases to be seen about during the daytime. It frequents wooded districts, generally evergreen woods, and is often found in fir-thickets. During the daytime it hides in some dense-foliaged tree, only venturing out at the approach of evening, when it prepares to hunt after the small birds and mammals which form its subsistence. It does not appear to frequent ruins, like some of our Owls, though it is said by some observers to be found in such places when they are situated in the woods; still I cannot find any direct evidence that such is the case.

Its call-note, which is to be heard in the evening and late into the night, is a deep hoot.

The flight, like that of all the Owls, is soft and very noiseless; and the bird glides almost like a spirit, often startling the observer when it passes silently near him by its sudden appearance.

Its food consists chiefly of small mice, but also of large insects and small birds, the latter of which it probably surprises when roosting.

With us in England this Owl is chiefly sedentary; and the same pair, if undisturbed, appear to keep to the same wood. On the Continent, however, it is partially, if not quite, migratory; and Naumann remarks as follows:—"Our Long-eared Owl is by many considered to be a resident; but, to judge from my own observations, it is, at least in this part of the country, a partial migrant, or even, to some extent, a regular migrant. In the summer they are spread throughout the woods, and are also generally found thus in the winter; but in autumn, from September until the time when the trees are leafless, and in spring, from the latter part of February until April, they are much more numerous. They may then be observed in parties of ten to sixteen or more in number. At this season I have also observed one on the open fields, where otherwise they seldom venture. In young conifer-groves, in places where the growth is getting to a fair size, numbers may often be seen together."

This Owl nests always in the woods, never, I believe, in clefts of rocks or old ruins, and takes possession of some deserted squirrel-dray or Crow's nest, which, with but slight repairs, it prepares for its progeny. I have taken the nest several times in Southern Germany, and always found it in some deserted nest in a spruce-tree. When it takes possession of an old nest it repairs it carefully and lines it neatly with feathers and down.

The eggs, four in number, are generally deposited about March, and are hatched in about twenty days. They are pure white in colour, and the surface of the shell is smooth but not glossy. In size those in my collection average about $1\frac{2}{4}\frac{5}{0}$ by $1\frac{1}{4}\frac{2}{0}$ inch, and are elliptical in shape. Mr. Benzon, of Copenhagen, sends me the following note:—"Here in Denmark this Owl is found here and there, both in Jutland and on the islands, including Bornholm, where it generally breeds in old Crows' nests, seldom in those of the Buzzard, and lays usually four eggs; I have sittings of this number taken on the 25th and 27th of April, the former being strongly incubated. I have one sitting of seven eggs, taken in Jutland on the 1st of April. On the 28th of April, 1859, Mr. Fischer found, in a wood in Northern Jutland, two nests containing young birds, one containing seven of good size. Both pairs had made use of old Buzzards' nests in beech trees."

The specimens figured are the old birds above described, the female being in the foreground.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Stirlingshire, March 25th, 1871 (*J. A. Harvie-Brown*). *b*, ♂ *ad.* Sterlingshire, March 30th, 1871 (*J. A. H.-B.*) *c*, *pull.* Near Altenkirchen, Rhenish Prussia, 1874 (*C. Sachse*). *d.* Albania (*H. Barclay*).

E Mus. C. A. Wright.

a, ♂. Malta, October 12th, 1861 (*C. A. W.*).



J G Keulemans lith

M&N Hanhart imp

SHORTEARED OWL.
ASIS ACCIPITRINUS.

ASIO ACCIPITRINUS.

(SHORT-EARED OWL.)

Strix noctua major, Briss. Orn. i. p. 511 (1760).
La Chouette ou la grande Chevêche, Buff. Hist. Nat. Ois. i. p. 372, pl. 27 (1770).
Stryx accipitrina, Pall. Reis. Russ. Reichs, i. p. 455 (1771).
Noctua minor, S. G. Gm. Nov. Comm. Petrop. xv. p. 447, pl. 12 (1771).
Strix brachyotus, J. R. Forster, Phil. Trans. lxii. p. 384 (1772).
Strix arctica, Sparrm. Mus. Carls. ii. pl. 51 (1788).
Strix palustris, Bechst. Gemeinn. Naturg. Deutschl. ii. p. 344 (1791).
Strix tripennis, Schrank, Fauna Boica, i. p. 112 (1798).
Strix caspia, Shaw, Gen. Zool. vii. p. 272 (1809).
Stryx ægolius, Pall. Zoogr. Rosso-As. i. p. 309 (1811).
Otus microcephalus, Leach, Syst. Cat. M. & B. Brit. Mus. p. 11 (1816).
Strix brachyura, Nilss. Orn. Suec. i. p. 62 (1817).
Otus brachyotos (Forst.), Steph. in Shaw's Gen. Zool. xiii. pl. 2, p. 57 (1826).
Strix sandwichensis, Bloxh. in Byron's Voy. of H.M.S. Blonde, App. p. 250 (1826).
Asio ulula, Less. Man. d'Orn. i. p. 116 (1828).
Otus palustris, C. L. Brehm, Vög. Deutschl. p. 124 (1831).
Otus agrarius, C. L. Brehm, op. cit. p. 124 (1831).
Brachyotus palustris (Bechst.), Bp. Comp. List, p. 7 (1838).
Asio brachyotus (Forst.), Macgill. Brit. Birds, iii. p. 461 (1840).
Ægolius brachyotus (Forst.), Keys. & Blas. Wirbelth. Eur. p. 32 (1840).
Brachyotus palustris americanus, Bp. Consp. Gen. Av. i. p. 51 (1850).
? *Otus breviauris*, Licht. Nomenc. Av. p. 6 (1854).
Brachyotus ægolius (Pall.), Rev. et Mag. de Zool. 1854, p. 541.
Brachyotus agrarius, Brehm, Naumannia, 1855, p. 70.
Brachyotus leucopsis, Brehm, ut suprà.
Brachyotus cassinii, Brewer, Proc. Bost. Soc. Nat. Hist. 1856, p. 321.
Asio sandvicensis (Bloxh.), Blyth, Ibis, 1863, p. 27.
Otus cassinii (Brew.), Gray, Hand-l. of B. i. p. 51 (1869).
Asio accipitrinus (Pall.), Newton, in Yarr. Brit. B. ed. 4, p. 163 (1873).
Ulula brachyotus (Forst.), James, ed. Wils. Am. Orn. i. p. 106, fide Coues, B. of N. W. p. 306 (1874).

Hibou brachyôte, French; *Carabo*, Spanish; *Gufo di Padule*, Italian; *Omm-issubien*, Maltese; *El-hama*, Moorish; *Sumpf-Ohreule, kurzöhrige Eule*, German; *Velduil*, Dutch; *Hedeugle, Sump-Hornugle*, Danish; *Siutitok*, Greenlandic; *Kortöret Ugle*, Norwegian; *Jorduggla, Kortörad Uf*, Swedish; *Lyhysarvinen-Pöllö*, Finnish; *Koritchnaya-sova*, Russian.

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Figuræ notabiles.

D'Aubenton, Pl. Enl. 438; Werner, Atlas, *Rapaces*, pl. 44; Kjærb. Orn. Dan. taf. vii.; Frisch, Vög. Deutchl. taf. 98; Fritsch, Vög. Eur. taf. 11. fig. 6; Naumann, Vög. Deutschl. taf. 45. fig. 2; Sundevall, Svensk. Fogl. pl. 25. fig. 2; Gould, B. of Eur. pl. 40; id. B. of G. Brit. i. pl. 32; Roux, Orn. Prov. pl. 49; Audub. B. of Am. pl. 38; Wilson, Am. Orn. pl. 33. fig. 3.

Ad. suprà pallidè rufescenti-ochraceus vix cervino tinctus, ubique nigro-fusco striatus vel notatus: supracaudalibus ochraceis versus apicem indistinctè fusco fasciatis: remigibus rufescenti-ochraceis, versus apicem fuscis et fusco fasciatis, sed in pogonio interno versus basin immaculatis: caudâ ochraceâ albido apicatâ et saturatè fusco fasciatâ: plumis circum oculos nigricantibus: facie albidâ vix nigro notatâ et lineâ ochraceo-albidâ nigro-fusco guttatâ circumcinctâ: corpore subtùs ochraceo, nigro-fusco striato, abdomine imo et pedibus pallidè ochraceis fere immaculatis: auricularibus plumis brevioribus, pilei plumis similibus.

Juv. magis rufescens et brunnescens, ubique saturatior, striis in corpore suprà saturatioribus et majoribus: iride pallidè flavâ.

Pull. lanugine tectus: corpore suprà saturatè fusco, ochraceo notato: fronte et regione circum oculos saturatè fuscis: corpore subtùs ochraceo, gutture et pectore superiore fuliginoso adumbrato.

Adult Female (Constantinople, 12th April). Upper parts warm ochreous with a buffy tinge, broadly streaked with blackish brown, the scapulars and wing-coverts more broadly marked, and rather blotched than streaked; upper tail-coverts nearly uniform ochreous, the feathers shaded and indistinctly barred with brown towards the tip; primaries rufescent ochreous, on the terminal portion brown, and otherwise broadly barred with this colour, the inner webs, however, are unbarred on the basal half; secondaries marked more like the scapulars, the barrings being closer and more blurred; tail ochreous, tipped with buffy white and barred with dark brown; feathers round the eye blackish, but otherwise the facial disk is dull white with a few scattered blackish markings; ruff white with a yellowish tinge, spotted and speckled with blackish brown; ear-tufts short, only about half an inch long, and coloured like the crown; underparts pale ochreous, with blackish brown streaks, which, however, are wanting on the legs and nearly so on the lower abdomen and under tail-coverts; bill and claws blackish; iris bright yellow. Total length about 14 inches, culmen 1·4, wing 12·2, tail 6·0, tarsus 2·0.

Adult Male (Orkney). Resembles the female, but is much paler, the underparts are less streaked; and it is smaller, measuring—wing 11·7, tail 5·8.

Young. Differs from the adult in having the plumage much browner and darker, the dark markings larger, and the ochreous ground-colour in the plumage is more rufous and darker; the iris is light sulphur-yellow instead of rich deep yellow.

Nestling (Orkney). Covered with close soft down; upper parts dull dark brown, the down tipped with warm ochraceous; forehead and round the eye deep brown; underparts ochraceous, on the throat and upper breast clouded with sooty brown.

The range of the Short-eared Owl is much more extensive than that of *Asio otus*; for it is found throughout Europe, Asia, and America, from the arctic regions down into Africa and the lower

part of South America, and, though absent in Australia and Oceania, it is found in the Sandwich Islands.

In Great Britain it is widely distributed; a large proportion, however, especially of those which visit the southern district, are winter visitors, which appear from the north in the late autumn; but it breeds sparingly in some parts of England, and more commonly in Scotland. I do not find it recorded as nesting in the south of England; but Mr. A. G. More says (Ibis, 1865, p. 15) that it "breeds in Suffolk, Norfolk, and Cambridge, formerly also in Huntingdon." Professor Newton says that he found two young birds on a dry heath at Elveden, in Suffolk, in 1854, and that in the same year at least two nests were taken in the fens of the south-west of Norfolk. He also says that some eggs taken at Littleport in the Isle of Ely in 1864 are the latest in this part of England which have come to his knowledge. There is no doubt that it used formerly to breed regularly in our eastern counties; but as the fens got reclaimed it gradually ceased to remain there during the nesting-season; and it appears now never to breed in Norfolk; for Mr. Stevenson writes (B. of Norfolk, i. p. 50) as follows:—"This species visits us regularly and pretty numerously in the autumn, though scarcely in such numbers as in former years, arriving in September and October about the same time as the Woodcocks, from which circumstance it is generally known as the Woodcock-Owl. In the spring these birds again proceed northwards towards the end of March, having, I believe, entirely ceased to breed in Norfolk." Mr. Cordeaux says (B. of Humber Distr. p. 14) that he has no positive evidence of its remaining to breed in the Humber district, but in 1870 a pair remained all the summer near the Aylesby beck; and Mr. More states (*l. c.*), on the authority of Mr. A. S. Bell, that its nest has once or twice been taken near Scarborough. It breeds in Durham and Northumberland; and, according to the late Sir W. Jardine, it probably nests also in the moorlands of Westmoreland and Cumberland. In Scotland it is, Mr. Robert Gray says (B. of W. of Scotl. p. 57), resident all the year in the west, north of Ayrshire, and thirty years ago it was a permanent resident as far south as Portpatrick, in Wigtownshire, where it nested regularly. In the Outer Hebrides it breeds on the moors of nearly all the islands; and among the inner islands it is resident all the year in Skye, Mull, and Islay. In the Shetland Isles it is said by Mr. Saxby to be quite common in the spring and autumn, the average time of its arrival being the 25th of April and the 16th of October. On rare occasions it remains to breed in Yell and Mainland. In Ireland it is not known with certainty to breed; but it is a regular winter visitant to that island.

Professor Newton says that it is "a scarce species in Greenland, but perhaps breeds there, though not further to the southward than 65°. Its northern range is altogether unknown; but it has been shot on the green islands in Disco Bay, lat. 68° 50′ N. It appears very doubtful if it is really found in Iceland, as the only ground on which it has been included is a figure on a plate of Olafsen's, which Dr. Krüper considers to represent the present species; but Faber refers it to the Wood-Owl, which can scarcely be correct

It occurs in the Færoes, where Mr. H. C. Müller has seen several examples; but he never found it breeding there. In Scandinavia it is common during the summer and on passage, but appears never to remain there during the winter. Mr. Collett writes to me respecting it in Norway as follows:—"Its range with us is almost subalpine; for it breeds in the lowlands only in exceptional cases, but commonly on all the fells in and above the birch-region. It is found

up into Finmark, but is most numerous on the plateaux of the Dovre and Langfjeldene. On the lowlands it usually occurs on passage. As a rule it is not common; but in the years when the lemmings are on the move to the lowlands it follows them and breeds there, being quite numerous in places; and in such years it is also more numerous on the fell-plateaux. Its horizontal and vertical range are about similar to those of the Double Snipe and Rough-legged Buzzard; and it frequents the same localities as the former." To this I may add that Pastor Sommerfelt states that he has received eggs of this Owl from Karasjok, in Finmark. Professor Sundevall says that it is found in the high northern districts of Sweden during the summer, and breeds as far north as Karasjok in 70° N. lat. In the southern provinces it is, as a rule, found during passage; but it occasionally breeds even in the south of Sweden. As in Norway, it is absent in the winter season. In Finland, Von Wright says, it inhabits the northern districts in summer, and is found in the southern districts during passage, but is rather rare than otherwise. It is not rare in Russia: I have received several specimens from Archangel; and Mr. Sabanäeff informs me that in summer it ranges as far north as the White Sea, and sometimes winters in Central Russia. In the Ural he met with it chiefly in the southern portion of the Perm Government.

Throughout Northern Germany it a common bird in suitable localities. I frequently met with it in different parts of Pomerania; and it is said to breed commonly near Stettin. According to Borggreve it is only a summer visitant to North Germany; but Kjærbölling says that it is not uncommon in Denmark, where it breeds, but is much more numerous in the autumn and winter than at other seasons of the year. It is said to breed in tolerable numbers in Holland; and Baron von Droste Hülshoff says that it is not uncommon on the island of Borkum during the greater part of the year, but is more numerous in autumn, and stragglers appear to remain there over the winter. In Belgium and France it is common on passage, and is stated by Professor Barboza du Bocage to be also common at Ribatejo, in Portugal. In Spain it is stated by both Colonel Irby and Mr. Howard Saunders to be a winter visitant only; and the former says that it is not very abundant in Andalucia. Passing eastward, again, I find that in Savoy a few pairs breed in the coldest regions of the mountains, but in autumn large numbers pass on migration from the middle of October to the end of November. In Italy it is very common on the spring and autumn migrations, and a large number pass the winter there, especially in the central and southern provinces, as well as in the islands of Sardinia and Sicily. In the latter it is, according to Doderlein, almost a resident; and Benoit states that it breeds in the mountainous districts. Doderlein relates that in the island of Ustica, where the species is very numerous in October and November, the birds are then very fat, attaining a weight of half a kilogramme, and are much relished by the islanders; on the spring passage they are lean and poor.

On the island of Malta, Mr. C. A. Wright states (Ibis, 1864, p. 49), it is "very common in spring and autumn, and has been known to breed here. Individuals are taken throughout the winter, when the plumage generally becomes of a lighter hue mixed with white; in one specimen the underparts were almost pure white." Throughout Southern Germany it appears to be common in most parts during passage; but the late Mr. E. Seidensacher informed me that it only occurred now and then at those seasons in Styria. Messrs. Elwes and Buckley state that it breeds commonly in the Dobrudscha; but in Greece, according to Dr. Krüper, it is only met

with during the winter. Professor von Nordmann speaks of it as being common during winter in Southern Russia; and Dr. Radde, who says that he never observed it in the Crimea, adds that on several occasions he noticed it in Bessarabia. It is found in Asia Minor and also in Palestine, where, however, it is not common. According to Von Heuglin it appears as a winter visitant, either singly or in large companies, in North-east Africa, and ranges southwards into Abyssinia. On the 19th February, 1862, he met with flocks of the Short-eared Owl near Lake Tana; and he observed it in the Bajuda desert, and the dry valleys between Assouan and Berenice. Vierthaler found it on the Blue Nile in November 1850; and Hartmann says that it ranges to Upper Sennaar. Captain Shelley mentions that in Egypt he has shot it as late as the end of March. It is also met with in North-west Africa during winter, and is said to be generally distributed in Algeria. Favier says that it is found in Tangier in small flights on open and wet ground; and he adds that it breeds there and interbreeds with the Cape-Owl; but this statement cannot, in my opinion, be credited. It appears to have occurred as far south in Africa as Natal, whence a living specimen has been sent to the Zoological Society of London.

In Asia it is found as far east as Japan. Ménétriés records it as common in the Caucasus; and Major St. John met with it in considerable numbers near Bushire in March 1867. It is common in India during the winter, arriving, Dr. Jerdon says, at the beginning of the cold weather, and leaving about March; but Mr. Hume says that it does not extend to Ceylon. Dr. Severtzoff records it as occurring in Turkestan on passage; and it appears to be met with throughout Siberia. Von Middendorff found it breeding on the Boganida, and remarks that some examples are much paler and whiter than European specimens. Von Schrenck had one specimen from near Nertschinsk, obtained by Mr. Maack; and Dr. Radde says that it is common in South-eastern Siberia, where it breeds. He adds that fresh eggs were found in the elevated steppes of Dauria on the 20th April, and also on the 25th May. Père David speaks of it as being rare in Mongolia; and Mr. Swinhoe states that it has been met with in China, as far south as Canton. It is not uncommon in Assam and British Burmah; and Mr. Gurney has received it from Singapore.

On the American continent the present species is also very widely distributed, being met with as far south as the lower part of South America; and it is also found on the Atlantic islands, Dr. Gundlach speaking of it as being an occasional visitant to Cuba. In Arctic North America it appears to be common during the summer season. Richardson observed it as far north as the 67th parallel in the fur-countries, where it arrives as soon as the snow disappears, and leaves again in September. Captain Blakiston met with it on the coast of Hudson's Bay; and though stated to be somewhat rare in Nova Scotia, it is not uncommon in New Brunswick, where, I was assured when there, it breeds; and Mr. Elliott Cabot found a nest on the island of Grand Menan, in the Bay of Fundy. It is generally distributed in the Eastern States, is said to breed in Massachusetts, Connecticut, New Jersey, and Pennsylvania; and Dr. E. Coues states that it is resident in South Carolina. Mr. Boardman found it quite common amongst the marshes of Florida; and in Texas it is at times numerous during the winter months. On the west coast it was met with in considerable abundance by MacFarlane in the Anderson-river district. Messrs. Dall and Bannister record it from Alaska—the former stating that it was not uncommon at Nulato, and the latter that it was the only Owl observed on St. Michael's Island.

Dr. Newberry met with it throughout Oregon and California; Dr. Cooper found it on the Great Spokane Plain, in Washington Territory; Dr. Heermann observed it abundantly in the Suisun and Napa valleys of California; and I have received examples from Vancouver's Island. Mr. Dall met with it in the Aleutian islands, and says that it is resident on Unalashka. In South America it is also very widely distributed, and is found as far south as Chili and La Plata; and Captain Abbott met with it in the Falkland Islands. He writes (Ibis, 1861, p. 152) respecting its occurrence there as follows:—"This is a scarce bird in East Falkland. It breeds in the long grass, as I have been informed; but I never found a nest. At Port Louis this species comes about near the houses at night in quest of mice; but I have never seen them near the town of Stanley." Mr. E. C. Reed records it (Ibis, 1874, p. 83) from Juan Fernandez.

It occurs on the Sandwich Islands; but the Short-eared Owl of the Galapagos Islands (*Asio galapagensis*, Gould) is certainly a distinct and fairly separable form, differing in having the upper parts very much more rufous, and the markings darker and larger; and the underparts are more rufous, darker, and more striped, the legs being conspicuously striped; and on the lower abdomen are a few cross bars as well as stripes.

Unlike the Long-eared Owl, the present species frequents the open moors and not the woods, and during passage especially it is often met with in fields, either in stubbles, grass, or in turnip-fields. It appears doubtful if, as a rule, it hunts after its prey during the daytime; but when flushed it flies off buoyantly, to all appearance in no way incommoded by the glare of the sun. It is said, however, during dull weather to hunt during the day and to catch small birds; but, as a rule, it is chiefly nocturnal in its habits, during the daytime remaining hidden in the open country, and especially in fields where there is cover, either high grass or turnips. Thus it is often flushed and shot by sportsmen when out Partridge-shooting. Its flight is buoyant, and somewhat Gull-like; and it is said to be one of the swiftest of the Owls on the wing. Its call-note, which it utters when on the wing, is a shrill, clear, not unpleasant cry, like the syllables *keaw*, *keaw*.

The food of this Owl consists chiefly of small mammals, especially field-mice, of small birds, coleopterous insects of various kinds; and it is said occasionally to attack and kill birds almost as large as itself. Indeed Mr. Low, in his 'Fauna Orcadensis,' says that in a nest of the present species found by him at Hoy were the remains of a Red Grouse and two Plovers, besides the feet of several others. In Scandinavia it follows the flocks of Lemmings, and renders good service in thinning their numbers, as it also does with us in keeping down the field-mice, and especially the moles, of which it devours large numbers.

The nest of the present species is always on the ground, and consists merely of a depression, either without any formal lining, or else lined with a little grass loosely collected together. It is usually placed amongst the grass or reeds, or in the heather on a moor, either under a little bush or else concealed amongst the grass. The eggs, four in number, are white, and smooth in the texture of shell, somewhat elongated in shape, but smaller in size than those of the Long-eared Owl. Specimens in my collection average $1\frac{23}{40}$ by $1\frac{11}{40}$ inch in size.

It appears that in seasons when food is very abundant, as for instance when the Lemmings make their periodical irruptions, the present species lays more than the normal number of eggs. Dr. Printz found a nest on the 13th June, 1866, with eight eggs; and Mr. Wolley obtained seven

from one nest. Thus Richardson's statement, on the authority of Hutchins, that it lays ten or twelve eggs in the fur-countries, is in all probability not unworthy of credence.

The specimens figured are an adult female in ordinary adult dress and an old male in pale plumage, these being those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, *pull.* Orkney (*Dunn*). *c*, ♂. Sweden (*Wheelwright*). *d*, ♂. Ujma, Archangel, May 20th, 1873 (*Piottuch*). *e*, ♂. Belgrade, near Constantinople, October. *f*, ♀. Near Constantinople, April 12th, 1870 (*Robson*). *g*. Upper Canada (*Krider*). *h*. Point Lepreaux, New Brunswick (*G. Thomas*). *i*, *k*. Fort Rupert, Vancouver's Island (*P. N. Compton*).

E Mus. C. A. Wright.

a. Malta, October 4th, 1862 (*C. A. W.*). *b*. Malta, midwinter (*C. A. W.*).

E Mus. Salvin and Godman.

a. Fort Brook, California (*Feilner*). *b*, *c*. Volcan de Agua, Guatemala, February 1863 (*O. Salvin*).



J.G.Keulemans lith.

Hanhart imp.

CAPE EARED-OWL.
ASIO CAPENSIS.

ASIO CAPENSIS.

(CAPE EARED OWL.)

Otus capensis, Smith, S.-Afr. Quart. Journ. ser. 2, vol. ii. p. 316 (1835).
Brachyotus capensis (Smith), Bp. Consp. Gen. Av. i. p. 51 (1850).
Strix capensis (Smith), Kjærb. Naumannia, ii. Heft i. p. 10 (1852).
Phasmoptynx, Kaup (*Otus capensis*, Smith), Trans. Zool. Soc. iv. p. 237 (1852).
Phasmoptynx capensis (Smith), Bp. Rev. et Mag. Zool. 1854, p. 541.
Asio capensis (Smith), Strickl. Orn. Syn. p. 211 (1855).
Phasmoptynx capensis a. tingitanus, Bp. Cat. Parzud. p. 2 (1856).
?*Ægolius capensis* (Smith), Heugl. Syst. Uebers. p. 14 (1856).
Otus capensis major, Schlegel, Mus. Pays-Bas, Oti, p. 3 (1873).

Figuræ notabiles.

Fritsch, Vög. Eur. taf. 11. fig. 7; Bree, B. of Eur. 2nd ed. i. pl. to p. 148.

Ad. suprà sordidè fuscus indistinctè pallidiore vermiculatus: tectricibus alarum superioribus magis vermiculatis et rufescente ochraceo notatis: remigibus primariis rufescenti-ochraceis apice fuscis, extùs et in pogonio interno versus apicem nigro-fusco fasciatis, intimis albo apicatis: secundariis fuscis, intùs rufescente ochraceo fasciatis et (intimis exceptis) albido terminatis: rectricibus centralibus fuscis ochraceo fasciatis, reliquis ochraceo-cervinis nigro-fusco fasciatis et albo apicatis: facie albidâ fusco circumdatâ, periophthalmis nigro-fuscis: corpore subtùs pallidè fusco, pallidè fulvido et albido guttato et vermiculato: abdomine imo, tarsis et subcaudalibus ochraceo-cervinis immaculatis: subalaribus rufescenti-ochraceis nigro-fusco notatis: iride, rostro et pedibus nigricantibus.

Adult Male (Natal). General colour above dark earth-brown with a chocolate tinge, narrowly and indistinctly vermiculated with lighter brown, the wing-coverts rather more distinctly vermiculated and marked with rufescent ochreous spots; primaries rufescent ochreous, broadly barred on the outer web and on the terminal half of the inner web with blackish brown, and broadly tipped with that colour, some of the inner ones finally tipped with white; secondaries dark brown, on the inner web barred with rufescent ochreous, all but the innermost broadly tipped with white; central rectrices dark brown, barred with three distinct basal and two indistinct terminal warm buff bands; rest of the tail-feathers warm buff, barred with blackish brown and broadly tipped with white; ear-tufts very small; face dull white, pencilled with dark brown; feathers round the eye black; facial ruff black slightly marked with reddish ochreous; underparts pale brown, marked, spotted, and vermiculated with light fulvous and whitish, becoming uniform ochreous buff on the lower abdomen, under tail-coverts, and legs; under wing-coverts rufescent ochreous, marked with blackish brown; iris blackish brown; bill and feet blackish. Total length about 13·5–14 inches, culmen 1·5, wing 11·6, tail 6·0, tarsus 2·25.

Adult Female. Does not differ from the male.

This Owl is only known as an exceedingly rare straggler to South-western Europe; but in North-west Africa it is tolerably common, and ranges as far south as the Cape colony. It is only lately

that it has been known with certainty to occur north of the Mediterranean, though as far back as 1851 it was supposed to straggle to Spain.

Kjærbölling, in his remarks on a collection made near Tangier, says (Naumannia, 1852, Heft i. p. 10) "A friend of mine, a young medical man, Mr. Carstensen, of Copenhagen, who has been spending last winter collecting ornithological specimens in Tangier, and has brought me many well-prepared birds and eggs, assures me that this Owl inhabits the neighbouring coast of Spain, and that he has seen it on passage there and back." Dr. Kjærbölling further says that he has every reason to believe in the accuracy of this statement: and subsequent investigation has proved its correctness; for Colonel Irby shot specimens in Spain in 1868. "In October 1868," he writes (Orn. Str. Gibr. p. 61), "on my first visit to Casa Vieja, when looking for Snipe in one of the wettest parts of the Mill soto, two Owls rose at my feet, which I shot, winging one, which I carried home alive to take to Gibraltar, seeing at once, from the bluish black colour of the irides, that I had got an Owl which I did not know. Afterwards, hunting about, only one more was seen, and killed. On the 10th of November following, during my second visit, I saw three more, two of which I winged and also carried off alive to Gibraltar, keeping them there for some time, till one got out and flew off as if nothing was the matter with it; so I sent the other at once to Lord Lilford, who had it alive till 1870. I met with no more till the 10th of November 1870, when I shot one and picked up the remains of another. In October and November 1871 I repeatedly and carefully went over the same ground, but did not see any, while friends of mine there in August and September, whom I begged to look out for these Owls, did not come across one. All the eight birds above mentioned were found within a space of about a square mile; and, strange to say, I never saw any elsewhere. In December 1873, Lieutenant Reid, of the Royal Engineers, shot one when Snipe-shooting in the same locality. I was there in March and May 1874, and, though I hunted all the likely ground over, failed to meet with even one." Except that Mr. Howard Saunders writes (Ibis, 1871, p. 65) that the first specimen of which he has positive information was obtained near Utrera in November 1867, I find no further record of its occurrence in Europe proper; but on the African side of the Straits of Gibraltar it is common. Carstensen states that it was found by him along the coast from Tangier to Morocco, in marshy places, such as are frequented by the Short-eared Owl, and is there resident; and Favier writes (*fide* Colonel Irby, *l. c.*) that it is "a common resident near Tangier, usually frequenting wet swampy ground, feeding chiefly on insects. Some pass over to Europe in March and April, returning in November and December. They nest on the ground in April or May, laying four, rarely five, round white eggs, sometimes marked with a few rusty spots. The young are not always hatched at the same time, as in the same nest may be found young birds of different growths." Mr. C. F. Tyrwhitt Drake, in his notes on the ornithology of Morocco (Ibis, 1869, p. 148) says:—"I came upon a colony of *Asio capensis* which had taken up their abode in a patch of mallows, about half an acre in extent, by the side of a stream. There were some twenty or thirty of them sitting solemnly blinking at me till I was within a few yards of them, when they lazily flapped away. This is the only time I ever saw them in the open country; in the wooded hills to the east they are common." According to Loche, it occurs on passage in Algeria: but it does not seem to range to North-east Africa; for Finsch and Hartlaub and Von Heuglin express doubt as to its occurrence there, and the former state that the species

which has been met with in that part of Africa is in all probability *Asio abyssinicus*, Guér., which they consider specifically distinct, as it has conspicuous white spots at the ends of the upper wing-coverts, and six or seven narrow dark bands on the tail. On the east side of the African continent it is recorded by Dr. Kirk from the Zambesi, where it is, he says (Ibis, 1864, p. 317), a common species, frequenting the clumps of trees bordering the valley, over the grass-plains near which it hunts during the dusk of the evening in search of small animals. It is also found in Madagascar; and Mr. R. B. Sharpe remarks (Cat. of Strig. in Brit. Mus. p. 241) that he has examined a specimen from there, and finds that it is specifically identical with the African bird. With regard to its occurrence in South Africa, Mr. E. L. Layard says (B. S. Afr. p. 43), that it is "rare in South Africa, and only found in marshy places, and is usually gregarious. It conceals itself during the day amongst long grass, or reeds, &c., and preys on water-insects, mice, and lizards." He adds that it must be very scarce, as he himself never observed it in any part of the colony. But subsequent to writing this he obtained it; for he writes (Ibis, 1869, p. 71) as follows:—"I met with several of these Owls at Naghtwaght, the residence of Mr. Alexander Van der Byl, near L'Agulhas; they inhabited a dry vley, their colour resembling exactly that of the dead grass and rushes." Mr. J. H. Gurney states that he has received it from Natal through Mr. Ayres; and Mr. T. E. Buckley writes (Ibis, 1874, p. 361) that it is "quite the commonest Owl in Natal and the Transvaal. Like our own Short-eared Owl, this species, when disturbed during the daytime, flies well; but it is not until just about dark that it comes forth of its own accord. Almost any evening it might be seen hunting over ground intersected by a 'spruit;' this it seems to prefer to marshy ground. I never heard it utter any cry. Its flight resembles that of the common Short-eared Owl. This species was not observed north of Pretoria." On the west coast of Africa it is recorded from Angola by Mr. J. J. Monteiro, who states (Ibis, 1862, p. 336) that it is very abundant on the Mucozo river, a tributary of the Quanza, in Cambambe; and Mr. Andersson sent several examples in his last collection from Damara Land, one of which was marked as having been obtained in Ondonga, Ovampo Land.

In habits the present species closely resembles the Short-eared Owl, and, like that bird, is, as above stated, often met with in damp marshy places, collected in parties or small flocks; but beyond the data above given, I find no particulars recorded respecting its habits or nidification. Favier states that it interbreeds with the Short-eared Owl, producing hybrids which only differ in having the front of the facial disk, the throat, and tarsi whitish, while the irides are half yellow; but I agree with Colonel Irby in doubting this statement, which appears to be based merely on information furnished to Favier by the Arab chasseurs.

The specimen figured is the adult male from Natal above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. Tangier (*Olcese*). *b*, ♂. Natal (*Ayres*).

E Mus. H. B. Tristram.

a, ♂. Ondonga, October 10th, 1867 (*C. J. Andersson*). *b*, ♂. Potchefstroom, Transvaal, S. Africa, April 1870, shot off nest containing three eggs (*T. Ayres*).

Genus SYRNIUM.

Strix apud Linnæus, Syst. Nat. i. p. 132 (1766).
Syrnium, Savigny, Ois. de l'Egypte, p. 52 (1810).
Ulula apud Stephens in Shaw's Gen. Zool. xii. pt. 2, p. 60 (1826).
Surnia apud Stephens, tom. cit. p. 40 (1826).
Aluco apud Kaup, Natürl. Syst. p. 44 (1829).
Scotiaptex apud Swainson, Classif. of B. ii. p. 216 (1837).
Ptynx apud G. R. Gray, List of Gen. of B. p. 8 (1841).

According to Mr. R. B. Sharpe this genus contains twenty-nine species, which are distributed over the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, three species only inhabiting the Western Palæarctic Region.

They are nocturnal in their habits, and frequent woods and groves, especially where there are plenty of hollow trees or densely shadowed places in which they can pass the day in safe concealment. Like all the nocturnal Owls their flight is extremely soft and noiseless; and their call-note is a clear, loud hoot, or a weird and loud scream like wild laughter. They feed on small mammals, birds, insects, and even fish and frogs, and search for their prey almost exclusively by night. They breed rather early in the year, either depositing their roundish white eggs in the hollow of a tree, in ruins, or barns, or else taking possession of some deserted nest; and *Syrnium aluco* has been known to nest in rabbit-burrows. Some species breed in forests far away from human habitations, whereas others appear to prefer localities close to houses, and even nest in barns which are regularly used, and amply repay the hospitality shown them by destroying numbers of rats and mice.

Syrnium aluco, the type of the genus, has the bill stout, decurved from the base, lower mandible notched; nostrils large, roundish, placed near the centre, the mandible partially concealed by stiff feathers; head large, round, without tufts; conch somewhat elliptical, extending from the level of the upper part of the eye to the base of the lower jaw, and having an anterior semicircular operculum; facial disks large, complete; wings rather short, rounded, first quill shorter than the secondaries, the second shorter than the sixth, the fourth and fifth longest; tail rather long, slightly rounded; legs and toes feathered nearly to the claws; claws long, curved, acute, grooved below.



J. Keulemans lith. Hanhart imp.

TAWNY OWL.
SYRNIUM ALUCO

SYRNIUM ALUCO.

(TAWNY OWL.)

Strix, Briss. Orn. i. p. 500 (1760).
Strix ulula, Briss. tom. cit. p. 507 (1760).
Strix aluco, Linn. Syst. Nat. i. p. 132 (1766).
Strix stridula, Linn. tom. cit. p. 133 (1766).
Strix sylvestris, Scop. Ann. I. Hist. Nat. p. 21. no. 13 (1769).
Strix rufa, Scop. tom. cit. p. 22. no. 16 (1769).
La Hulotte, Buff. Hist. Nat. Ois. i. p. 358; Pl. Enl. 441 (1770).
Le Chat-huant, Buff. tom. cit. p. 362, pl. xxv., Pl. Enl. 437 (1770).
Austrian Owl, Lath. Gen. Synop. i. p. 136. no. 21 (1781).
Austrian ferruginous Owl, Lath. tom. cit. p. 137. no. 24 (1781).
Solognese Owl, Lath. tom. cit. p. 137. no. 25 (1781).
Strix soloniensis, Gmel. Syst. Nat. i. p. 292 (1788, ex Lath.).
Strix sologniensis, Lath. Ind. Orn. i. p. 63. no. 33 (1790).
?*Strix austriaca*, Steph. Gen. Zool. vii. p. 247 (1809).
Strix sylvatica, Steph. tom. cit. p. 253 (1809).
Syrnium ululans, Savigny, Ois. de l'Egypte, p. 52 (1810).
Syrnium stridulum, Steph. in Shaw's Gen. Zool. xiii. pt. 2, p. 62 (1825).
Syrnium aluco (L.), Boie, Isis, 1828, p. 315.
Aluco, Kaup (*Strix aluco*, Linn.), Natürl. Syst. p. 44 (1829).
Ulula stridula (Linn.), Selby, Ill. Brit. Orn. i. p. 102 (1833).
Aluco stridulus (L.), Macgill. Rapac. B. of G. Brit. p. 367 (1836).
Ulula aluco (L.), Keys. & Blas. Wirbelth. Eur. p. 32 (1840).
Syrnium ædium, C. L. Brehm, Vogelfang, p. 39 (1855).
Syrnium rufescens, C. L. Brehm, ut suprà (1855).

Wood-Owl, *Tawny Owl*, English; *Chouette-hulotte*, French; *Coruja do mato*, Portuguese; *Allocco*, Italian; *Bu-ru-ru*, Arabic; *Wald-Kautz*, *Wald-Eule*, German; *de Boschuil*, Dutch; *Katugle*, *Natugle*, Danish and Norwegian; *Kattuggla*, *Skrikuggla*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 437, 441; Werner, Atlas, *Rapaces*, pl. 39; Kjærb. Orn. Dan. taf. 7; Frisch, Vög. Deutschl. taf. 94, 95, 96; Fritsch, Vög. Eur. taf. 11. fig. 8; Naumann, Vög. Deutschl. taf. 46, 47, fig. 1; Sundevall, Svensk. Fogl. pl. 25. fig. 4; Gould, B. of Eur. pl. 47; id. B. of G. Brit. i. pl. 24; Schlegel, Vog. Nederl. pl. 42; Roux, Orn. Prov. pls. 50–52; Bettoni, Ucc. Lomb. pl. 76; Susemihl, Vög. Eur. taf. 45.

Ad. pileo ferrugineo-fusco: nuchâ et corpore suprà cum tectricibus alarum nigro-fuscis, sordidè ferrugineo

et albido pulcherrimè variegatis: scapularibus extùs albis, et tectricibus alarum majoribus extùs maculis albis notatis: remigibus ochraceo-fuscis saturatè fusco transfasciatis, primariis (extimâ exceptâ) in pogonio externo irregulariter albido et ochraceo-cervino notatis: caudâ sordidè ochraceo-fuscâ, rectricibus centralibus fusco transversè vermiculatis, reliquis eodem colore fasciatis: areâ oculorum griseo-albâ rufescenti lavatâ et plumis nigro-fuscis rufescentibusque et albidis marginatâ: corpore subtùs albido ferrugineo immixto, et maculis longitudinalibus nigro-fuscis notato, plumis versus apicem vix fusco undulatis: rostro flavido, ad basin cæruleo-corneo: iride cæruleo-nigrâ, marginibus palpebrarum pallidè rubris: unguibus cæruleo-corneis.

Adult Male (Christiania, 1st May). Crown and space between the facial disks blackish brown, the feathers margined with deep rufous; nape and upper parts generally pale rufous varied with rufous brown and white, most of the feathers with a dark-brown central stripe, those on the lower back especially and the scapulars and wing-coverts irregularly vermiculated with dark brown; scapulars with most of the outer web pure white; quills ochraceous brown with a greyish tinge, barred with dark brown, the second and following quills to the sixth broadly but irregularly bordered on the outer web with creamy white and creamy ochreous; larger wing-coverts with a large white patch on the outer web; tail dull ochreous rufescent, the central feathers vermiculated and the rest broadly barred with dull blackish brown; facial disk greyish white tinged with rufous, the shafts of the feathers blackish; the ruff surrounding the disk blackish brown, the feathers bordered with white and slightly varied with rufous; underparts white tinged here and there with rufous, broadly streaked with blackish brown, and many of the feathers transversely vermiculated with brown towards the tip; legs feathered right down to the claws, white slightly marked with dark brown; bill light horn becoming yellow at the tip; iris blue-black; edge of the eyelids pinkish; claws light horn at the base and darker towards the tip. Total length about 18 inches, culmen 1·5, wing 10·9, tail 7·2, tarsus 2·0.

Adult Female. Resembles the male, but is rather larger in size.

Nestling (Altenkirchen, 15th May). Covered wlth greyish-white down, tolerably closely barred with sooty brown; tail and quills dull light reddish brown, the former transversely vermiculated and the latter barred with dark brown; tail tipped with white; bill dull yellowish green, becoming bluish at the base; iris bluish black; feet scarcely feathered, sulphur-yellow with a tinge of green.

Obs. The Tawny Owl is subject to two phases of plumage—the one rufous, which is described above, and the other grey, in which latter the general tone of coloration is greyish instead of rufous. So far as can be ascertained, I quite agree with Mr. Sharpe that these plumages are not dependent either on age or sex; for I have seen both males and females, young and old birds, in each of these plumages. It seems to me, however, that, as a rule, these rufous-tinged examples are more common in Northern and Central Europe than in Southern Europe, Asia Minor, and North Africa; but, on the other hand, one in my collection, from Mount Lebanon, is very dark reddish brown in general tinge of coloration. Mr. Gurney points out to me that Algerian specimens run considerably larger in size than those from Central and Northern Europe; but I do not think that this difference is of any specific value. The Tawny Owl appears to be subject to partial melanism; for the Ritter von Tschusi Schmidhofen states (J. f. Orn. 1871, p. 117) that he received one from Southern Hungary which had the entire upper parts blackish brown, the face black, the underparts, wings, and tail brown, and on the head and breast were a few normally coloured feathers; and referring to the collection at Constantinople, Messrs. Sclater and Taylor write (Ibis, 1876, p. 63) as follows:—"The collection contains a very curious black Owl which we consider to be a melanism of *Syrnium aluco*; and Dr. Long told us that Robson, who shot

the bird near Constantinople, was of the same opinion. This specimen is rather smaller than average examples of *Syrnium aluco,* and is nearly black; but in a favourable light one can see traces of the markings characteristic of that species, showing faintly, like the nearly obsolete spots on the skin of a black leopard."

The present species is generally distributed throughout Europe, ranging north to about 67° N. lat., and south into North Africa. It does not, however, appear to occur far east of the Ural, if at all beyond that range of mountains.

In Great Britain the Tawny Owl is found in suitable localities in all the counties of England, and probably of Wales also; but it becomes scarcer in Scotland, though much more numerous than it used formerly to be; for about a quarter of century ago it was comparatively scarce, whereas now, according to Mr. A. G. More (Ibis, 1865, p. 15), it nests regularly in the counties of Aberdeen, Banff, Elgin, Nairn, Inverness, Ross, Sutherland, and even in Caithness. It has been met with also in some of the Inner Hebrides, as Islay and Mull; and Low states that it is found in Orkney in summer. In Ireland it is extremely scarce; for Thompson cites only one instance of its occurrence there.

It is not found in Greenland or Iceland; but, according to Captain Feilden, it has been twice obtained at Eide, in the Færoes—once in January and again in March 1871. In Scandinavia it is widely distributed. Mr. Collett says that it breeds numerously in the southern and western districts of Norway up to the Trondhjems fiord, above which it becomes rarer, but it has been observed in some years in Salten, 67° N. lat. In the vicinity of Christiania it is a resident, and is the most numerous of the Owls. According to Sundevall it is the commonest Owl in Sweden, and is abundant as far north as Gefle, Dalecarlia, and Wermland in about 60°–61° N. lat., but scarcely ranges above that latitude. I never observed it in Finland; nor is it included by Von Wright in his work on the birds of Finland; but Mr. Leonida Sabanäeff says that it is generally distributed and tolerably common in Central Russia, but he did not observe it in the Vologda Government. In the Ural it is not so common as the Ural Owl, and becomes rare on the eastern slope of that range. It does not appear to occur further north than the upper portions of the Perm Government.

In Poland, the Baltic provinces, and throughout the whole of North Germany it frequents wooded localities; and Mr. Collin says that it is found throughout Denmark wherever there are groves and woods, being, however, rare in Vendsyssel and on the island of Bornholm. In Western Germany I have often seen it when collecting; and Mr. Carl Sachse informs me that it is very numerous near Altenkirchen, where it destroys many broods of young birds, often killing the parent birds also. In the wooded portions of Holland it is not uncommon; but it is said to be rare in Belgium, where it nests in the large conifer-woods of the Campine, and in the wooded districts in the higher ground. It is generally distributed in the wooded districts of France, and is said to be very abundant in Provence. According to Professor Barboza du Bocage it is tolerably numerous in Portugal, and in Spain it is not uncommon in the higher wooded districts; but neither Colonel Irby nor Mr. Saunders observed it in Andalucia. Lord Lilford informs me that it is well known in the province of Santander, and he obtained an old female with nestlings near Pótes in that province, and heard it in Aragon, but never met with it elsewhere in Spain. In Savoy and Italy it is tolerably common in wooded localities, but much more numerous in the

former than in the latter country; and in Sicily it is again less abundant than in Italy, but it is not known to inhabit Sardinia.

Throughout Southern Germany the Tawny Owl is resident and generally distributed; and Messrs. Danford and Harvie-Brown say that it is especially common in Transylvania in winter; but it is stated by Messrs. Elwes and Buckley to be by no means abundant in Turkey; for they never observed it there, though Mr. Robson has obtained it more than once. In the south of Russia and on the borders of the Black Sea this Owl is not rare in wooded localities, but is naturally wanting in the steppe regions. In Asia Minor and Greece it is resident, but, Dr. Krüper informs me, is nowhere numerous. He found it breeding in Greece, Asia Minor, and on Olympus. In Palestine, according to Canon Tristram (Ibis, 1865, p. 262), it is "very common where there is large timber, but nowhere else. When camping in the forest country of Gilead in April, we heard its hoot night after night, and took one nest in a tree containing three hard-set eggs. In the collection of the late Mr. Herschell there was a specimen shot by that gentleman at Jericho, certainly an exceptional locality; and when at the Cedars of Lebanon, we found it very numerous, roosting in twos and threes in the highest tops of the patriarchs of the grove. The plumage is very much more grey than in any European specimens I have seen, but not more so than in some from the Atlas."

In North-east Africa it must be very rare, if present at all; for, although Savigny includes it in his 'Description de l'Egypte,' no subsequent explorer appears to have obtained it. In North-west Africa, however, it is tolerably common. Loche states that it breeds in the wooded portions of Algeria; Mr. Tyrwhitt Drake found numbers in caves at Tetuan; and Favier, who says that it is the scarcest of the Owls near Tangier, adds that "it is met with on passage, crossing to Europe in February, and returning in November and December. Some remain and breed in April, laying two eggs, of which often only one is hatched."

The Tawny Owl does not range far into Asia. Mr. J. H. Gurney records it from Beyrout, in Syria; and Dr. Severtzoff states that it is rare in Turkestan, but probably resident in some districts; and he adds that it occurs sporadically on the Chatir-kul river.

The Tawny Owl is essentially nocturnal, more so, perhaps, than any other of our British Owls; and should it be disturbed and compelled in the daytime to leave its snug retreat, it appears to be bewildered and dazed by the glare of daylight. It frequents woods and dense groves, during the daytime seeking refuge either in the dense shelter of the foliage or else in the hollow of a tree, and occasionally, it is said, on the ground, seldom or never leaving its resting-place until the shades of night commence to fall, unless forced to do so. Sometimes it seeks shelter in solitary ruins or old towers, but less frequently than in groves. It prefers oak- or beech-woods, especially where there are plenty of hollow trees, and is more often found in hilly than in very flat localities. So soon as the night sets in it becomes restless, leaves its hiding-place, and commences ranging about in search of food, which consists of small mammals of various kinds, young hares and rabbits, large insects, and even fish and frogs. Macgillivray states that he found the stomach of one nearly filled with earth-worms; and the Rev. Mr. Bree cites an instance of young Tawny Owls being fed by their parents with live fish (bullheads and loach). Like other birds of prey this Owl disgorges the indigestible portions of the animals it devours, in the shape of elongated pellets, which are cast out of the mouth, and are found in considerable

numbers in the vicinity of its regular haunts; and a careful examination of these reveals the nature of its food. Dr. Altum, who has made some most useful researches in this direction, states (J. f. Orn. 1863, p. 218) that he made a careful examination of fifty-two pellets cast by Tawny Owls, and found in them the following remains—viz. 3 *Crossopus fodiens*, 1 *Crocidura araneus*, 10 *Sorex vulgaris*, 11 *Talpa europæa*, 1 *Mus decumanus*, 2 *Mus musculus*, 6 *Mus sylvaticus*, 2 *Arvicola amphibius*, 1 *Arvicola glareolus*, 1 *Arvicola agrestis*, 33 *Arvicola arvalis*, 1 *Sciurus vulgaris*, 1 *Emberiza citrinella*, 1 *Certhia familiaris*, 10 small birds indeterminable, 14 *Carabus granulatus*, 4 *Dytiscus marginalis*, 4 *Scarabæus stercorarius*, 1 *Silpha rugosa*, 2 *Harpalus* sp.? From this it appears that the Owls had been feeding chiefly on fieldmice (*Arvicola arvalis*) and other small mammals. Lord Lilford, who informs me that he has done all he could to preserve it in Northamptonshire, adds that the keepers are very bitter against this bird on account of its undeniable partiality for young rabbits and an occasional leveret.

The Tawny Owl breeds rather early in the year, its eggs being deposited in March, often in the early part of that month. It generally selects the hollow of a tree as a nesting-place, frequently those which are covered with ivy; but it sometimes takes possession of a deserted Crow's or Rook's nest, or nests in an old ruin, a barn, or an old disused chimney; and instances are even known of eggs having been found in a rabbit-burrow. The eggs, three or four, and but rarely five, in number, are pure white, smooth, and average about $1\frac{32}{40}$ by $1\frac{24}{40}$ inch in size, and are placed on a slight bed of dry herbage, which forms but a poor apology for a nest. The call-note of the Tawny Owl is a clear, loud hoot, most frequently uttered in the early morning, and in the evening after sundown. During the pairing-season these birds, or, as it would seem, the males only, utter a loud call or pairing-cry not unlike the wild laughter of a drunken man, which, when heard in the forest, sounds peculiarly weird and uncanny. My friend Mr. Sachse used to keep a tame Tawny Owl in his yard; and a pair of wild birds used to come there also; and together they used to make a most unearthly and horrible noise.

The specimens figured are an adult male in the rufous plumage from Norway, and a nestling from Altenkirchen, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Darlington, June 9th (*Backhouse*). *b*, ♀ *ad.*, *c*, ♀ *pull.* Middleton Hall, Tamworth (*Hanbury Barclay*). *d*, ♂ *pull.*, *e*, ♀ *pull.* Altenkirchen, near Coblentz, May 15th and 17th, 1864 (*H. E. D.*). *f*, ♀ *ad.* Hareskov Sjœlland, Denmark, September 13th, 1870 (*A. Benzon*). *g*, ♂ *ad.* Christiania, Norway, May 1st, 1873 (*R. Collett*). *h*, *ad.* Mount Lebanon (*Allen*).

E Mus. Norv.

a, *b*, *ad.* Easton, Norfolk. *c*, *pull.* Norfolk. *d.* France (*Parzudaki*). *e*, ♀. Spain. *f*, *g*, *h.* Beyrout (*Laurella*). *i*, ♂. Smyrna (*Stevens*). *k.* Syria (*Verreaux*). *l.* Mogador. *m*, *n*, *o*, *ad.* Tangier (*Favier*). *p.* N. Africa (*Verreaux*). *q*, ♀. Province of Constantine, Algeria (*Tristram*).



J. G. Keulemans, Lith.

Hanhart, imp.

URAL OWL.
SYRNIUM URALENSE

SYRNIUM URALENSE.

(URAL OWL.)

Strix uralensis, Pall. Reise Russ. Reichs, i. p. 445 (1771).
Strix liturata, Tengmalm, Vet. Ak. Handl. 1793, p. 264.
Strix macroura, Wolf, Taschenb. deutsch. Vogelk. i. p. 84 (1810).
?*Strix macrocephala*, Meisn. Syst. Verz. Vög. Schweiz, p. 34 (1815).
Surnia uralensis (Pall.), Steph. in Shaw's Gen. Zool. xiii. pt. 2, pl. 40 (1826).
Ulula litturata (Tengm.), Steph. tom. cit. pt. 2, p. 60 (1826).
Syrnium uralense (Pall.), Boie, Isis, 1828, p. 315.
Syrnium macrocephalum (Meisn.), C. L. Brehm, Vög. Deutschl. p. 115 (1831).
Scotiaptex uralensis (Pall.), Swains. Classif. of B. ii. p. 216 (1837).
Syrnium uralense (Pall.), Bp. Comp. List, p. 6 (1838).
Ulula uralensis (Pall.), Keys. & Blas. Wirbelth. Eur. p. 32 (1840).
Ptynx uralensis (Pall.), G. R. Gray, List of Gen. of B. p. 8 (1841).
Strix litturata, Tengm., Degl. Orn. Eur. i. p. 124 (1849).
Ptynx liturata (Tengm.), Ludw. Brehm, Naumannia, 1855, p. 270.

Habichts-Eule, *Ural-Habichts-Eule*, German; *Slag-ugle*, Norwegian; *Slaguggla*, Swedish; *Vürupöllö*, Finnish; *Baba*, Russian.

Figuræ notabiles.

Temminck, Pl. Col. 27; Werner, Atlas, *Rapaces*, pl. 36; Kjærb. Orn. Dan. taf. 6; Fritsch, Vög. Eur. taf. 12. figs. 1, 2; Naumann, Vög. Deutschl. taf. 42. fig. 1; Sundevall, Svensk. Fogl. pl. 24. fig. 2; Gould, B. of Eur. pl. 44; Susemihl, Vög. Eur. taf. 42.

Ad. albus suprà et subtùs saturatè fusco conspicuè striatus: areâ oculorum cinereo-albâ plumis scapis nigro-fuscis, et plumis rigidis albis saturatè fusco maculatis cinctâ: remigibus et rectricibus saturatè fuscis griseo albo transfasciatis: caudâ elongatâ, rotundatâ et albido terminatâ: pedibus lanatis albidis vix pallidè fusco notatis: rostro flavido: iride fuscâ.

Adult Female (Archangel, 26th November). Upper parts white, broadly streaked with dark brown; upper tail-coverts brown, mottled with ashy grey; quills dark brown, barred and tipped with ashy brownish grey; tail similarly marked; but the light bars are slightly marbled with darker ashy brown, and the tip is nearly white; forehead and space between the facial disks deep brown; facial disks greyish white, the feathers having blackish shafts; ruff white, mottled with deep brown; underparts white, broadly streaked with deep brown; feet and legs densely feathered, white with a few brownish grey mottlings; bill deep yellowish; iris dark brown. Total length about 24 inches, culmen 1·8, wing 14·0, tail 11·10, much rounded, the outside feathers being fully 1·5 inch shorter than the central ones, tarsus 2·4.

Adult Male (Archangel). Does not differ from the adult female, except in greater purity of colour and in its smaller size.

Obs. An adult male obtained in South-eastern Siberia by Dr. Radde agrees closely in coloration and markings with examples from Archangel and Sweden; but a female in my collection from Southern Germany, evidently a younger bird, is much darker, the underparts being pale buffy brown instead of white, and the upper parts are suffused with that colour, the lighter margins to the feathers being but narrow; the facial disk is also brownish grey in colour. I have not had a specimen of the young or nestling bird to describe.

In Northern and Eastern Europe the present species is not uncommon in some localities, though but rare in others. It does not range into Asia Minor or Africa, but is found far east in Northern and Central Siberia, being replaced in Mongolia, China, and Japan by a closely allied form (*Syrnium fuscescens*), which differs in being smaller, darker, and more reddish in colour.

So far as I can ascertain, the Ural Owl has not been met with in Western Europe, nor has it occurred in Great Britain. In Scandinavia, though not common, it does not seem to be very rare. On several occasions it has been met with near Christiania. Mr. Collett states that one was sent to Professor Esmark from Höland in 1841, a second was shot in the same locality in the winter of 1843, and a third in Urskoug in the autumn of 1846. Since then it has spread sparingly, and has been obtained in several places, such as Arendal, Mandal, &c. One was procured in Elverum in 1862, and one in the botanical gardens at Christiania in November 1865. In Sweden, Nilsson says, it has been shot in Dalecarlia, Jemtland, and Lycksele Lapland, at Karesuando, and in Northern Wermland, where it appears to breed. It also occurs near Upsala, where, however, it is very rare. Von Wright states that it is now and again met with in Southern and Central Finland.

In Russia it is not uncommon. Mr. Meves says that there are several specimens, both in adult and young plumage, in the Archangel Museum; and I have received examples from the vicinity of that town. Sabanäeff writes that it is only seen near Moscow during migration, but that it breeds in the Government of Jaroslaf, and, according to Meshakoff, also in the Government of Vologda. In the Governments of Kazan and Simbirsk it is very numerous; in the Ural he met with it numerously in all the conifer-forests of the Government of Perm; but it does not appear to breed in the black-soil country. In Poland it is extremely rare; for Mr. Taczanowski knows of but one example obtained there, which was killed on the mountain of Swientykrzyz (Holy Cross). Borggreve does not include it in his list as having occurred in North Germany; but Mr. Wiese states (J. f. O. 1860, p. 215) that there is a good series of specimens in the Königsberg Museum, said to have been collected principally in the vicinity of Gerdauen. It has been stated to have occurred in Denmark; but Mr. Benzon assures me that there is no proof that this is the case, and he disbelieves it.

In South-eastern Germany it appears to be a permanent resident, more especially in the Böhmer Wald, where (*fide* Fritsch, J. f. O. 1871, p. 184) it occurs regularly, and breeds, Mr. Hojdar states, "in the districts of Kušvarda, Fürstenhut, Ferchenhaid, Salnau, and Tusset. The brown-coloured young specimens were described and figured by Mr. Hejrovsky in a sporting-periodical as a new species under the name of *Strix schumavensis*. In the Museum at Frauenberg are numerous examples of this Owl in great variety of plumage. That this species occurs also in other large forests of Bohemia is proved by H. Hüttenbacher having received two specimens from Pürglitz." Von Tschusi-Schmidhofen received one from the Böhmer Wald, which

was shot near Schattawa on the 27th of March. According to the late Mr. E. Seidensacher it is found in Styria. It occurs, this gentleman writes, "in this neighbourhood [Cilli]. It was sent to our gymnasium in the brown immature plumage from Liboje and Montpreis; and an adult bird was sent in from Franz in November 1863 to be stuffed. I cannot offer any proof that this rare Owl nests in Styria; but I fully believe that it does, from its repeated occurrence at different seasons of the year. On the 7th March 1860 I procured a mortally wounded female at Neustadt, in Krain; and on the 28th April the same year I watched another of these Owls for a long time, and in close proximity; and when out shooting foxes at Bettlergraben, near Kranichsfeld, on the 22nd February 1847, two of these birds (paired) were seen together, and were shot." The Ritter von Tschusi-Schmidhofen, in an excellent article on various birds found in Austria (J. f. O. 1870, pp. 257–263), gives very full details of the various recorded occurrences of this Owl, clearly demonstrating that it is widely distributed in Eastern Germany, being common in some parts and rarer in others, according to the nature of the country, and breeds not uncommonly in some localities. He cites the following localities as those where it has been obtained, viz.:—Bohemia (as above stated); Moravia—the Ung. Hradische Kreis; Lower Austria—Pukersdorf; Upper Austria—St. Martin, near Kremsmünster, near Linz, and the Almsee; Styria—Gratz, Friedau, Gusswerk, Marburger Kreis, near Wilden, Liboje, Montpreis, and Laibach; Carinthia—near Klagenfurt, and Freibach; Krain—Laibach, not rare in the Reifnitzer and Gottscheer forests, near Sagor (breeds), Schneeberg, Gerlachstein (where it breeds), and Krupp, near Gradatz; Croatia —near Agram; Siebenbürgen—near Hermannstadt and Klausenburg (not uncommon), Koncza, near Mühlbach, Hatzeger Mountains (the commonest species after the Short-eared Owl), and the Szekler country; Hungary—Neusohl, Neustadl, Runaszecs, the Sohler and Liptauer forests, near Briesz (a young bird in down), Altsohl (where Petényi took a nest of three eggs), Kaschau, Pressburg, and Szécs-Polyánka in the Zempliner Comitate; Galicia and Poland—the forests of Pieniaki, and various parts of the Carpathians.

In Transylvania, Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 297) of it, "Not rare, appearing, however, to be much more abundant in some years than in others—Herr Buda says, every third year. Bieltz writes that it is not rare near Hermannstadt and nests in the woods lying to the south of that town, the egg being smaller than that of the Eagle Owl, as round, but with a much more tender shell. We have not found this statement of its breeding in the country confirmed by any other authority. Danford saw this bird on two occasione near Demsus, in the Hátzeg valley; in October, and it is often to be met with among the alder bushes on the Strell and Klopotiva." According to Count Casimir Wodzicki (J. f. O. 1853, p. 431), the Ural Owl breeds in the central Carpathians of Galicia, but only rarely, and in scattered pairs; in the autumn it wanders about, and is then more frequently seen in the hilly districts.

In Asia this Owl is found only in the northern portions of the continent, not ranging far south. Mr. Seebohm believes that he saw it on the Jennesei; Von Middendorff found it numerous near Amginsk and Udskoj-Ostrog; Von Schrenck met with it on the Lower Amoor; and Dr. G. Radde writes (Reis. im Süd. v. Ost-Sib. p. 122):—"Young birds shot in the Bureja Mountains in October and November do not differ much in plumage or markings; and I found none intermediate between the European bird and the Japanese *Strix rufescens* amongst my birds, but observed the peculiarity referred to by Messrs. Middendorff and Schrenck, that the

white of the plumage, as also the blackish-brown spots, were purer. In young birds the feathers on the tarsi and toes have all brownish-grey points. I observed this Owl in 1856 in the Apfel Mountains (Kirinsk), as also in Eastern Sajan; but it is very rare there. On the other hand, I found it numerous in the Bureja Mountains in autumn and early winter. Here the periodical migrations of the squirrels, in the elevated parts of the valleys where *Pinus cembra* is found, appear to be not without influence on their habits, as they are then found in great abundance. It is undoubtedly the commonest of all the Owls in the Bureja Mountains." I may add that I possess an adult bird obtained by Dr. Radde, which agrees closely with specimens from European Russia and Sweden.

But little, comparatively speaking, is known respecting the habits of this Owl or its nidification. It appears to resort to the forests and hills for the breeding-season; and in the late autumn and winter it is to be met with in the open country and on the plains, where it can more easily find food. Early in April it resorts to its nesting-localities, which are generally in elevated beech-forests or rocky mountain-gorges; and its presence there is made known by its pairing-call, which is loud and is said to resemble the bleating of a goat. It is by no means a strictly nocturnal bird, but is often seen flying about in search of prey during the daytime.

Its eggs, two or three in number, are deposited late in April or early in May, in the hollow of a beech tree or the cleft of a rock, and are said to resemble those of the Tawny Owl (*Syrnium aluco*); and one taken by Petényi, near Altsohl, measured $24\frac{1}{2}'''$ by $19\frac{1}{3}'''$ (Vienna measure).

The specimens figured are the adult bird above described, and a young bird, this latter being from a drawing by my late friend Magnus von Wright, brother to the eminent Finnish painter of that name.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.* Jemtland, Sweden, January 1872 (*Meves*). *c*, ♀. Archangel. *d*, ♀. Archangel, November 26th. *e*, ♂. Zaja, Archangel, December 4th, 1875 (*Piottuch*). *f*, ♀ *jun.* Böhmerwald, South Germany (*Möschler*). *g*, ♂ *ad.* Amurland, December 3rd, 1857 (*Dr. G. Radde*).

E Mus. Norv.

a, *ad.* Stockholm. *b*, *ad.* Sweden. *c*. Russia.

E Mus. Brit. Reg.

a, ♀ *ad.* Lapland (*Wahlberg*). *b*, ♀ *ad.* Styria. *c*, ♂ *ad.* Ussuri river, Siberia, November 5th, 1873 (*Dr. Dybowski*).



1/3

J. Wolf del.
W. Hart lith.

LAPP-OWL.

SYRNIUM LAPPONICUM

SYRNIUM LAPPONICUM.

(LAPP OWL.)

Strix lapponica, Sparrm., fide Retz. Faun. Suec. p. 79 (1800).
Strix laponica, Sparrman, Sv. Orn. pl. 4 (1806).
Stryx barbata, Pall. Zoogr. Rosso-As. i. p. 318, tab. ii. (1811).
Ulula lapponica (Retz.), Less. Man. d'Orn. i. p. 113 (1828).
Strix barbata (Pall.), Gloger, Naturg. Vög. Eur. i. p. 110 (1834).
Surnia lapponica (Retz.), Gould, B. of Eur. i. pl. 42 (1838).
Syrnium cinereum, Bp. Comp. List, p. 6 (1838, nec Gm.).
Ulula barbata (Pall.), Keys. & Blas. Wirbelth. Eur. p. 32 (1840).
Strix microphthalmos, Tyzenh. Orn. Powsz. i. p. 86 (1843).
Syrnium microphthalmum (Tyz.), G. R. Gray, Gen. of B. i. p. 39 (1845).
Syrnium lapponicum (Retz.), Strickl. Orn. Syn. i. p. 188 (1855).
Ulula cinerea, Schlegel, Mus. Pays-Bas, *Striges*, p. 9 (1862, nec Gmel.).
Syrnium cinereum, var. *lapponicum*, Ridgw. N. Am. Birds, iii. p. 29 (1874).

Laplands-ugle, Norwegian; *Lapp-uggla*, Swedish; *Lapinpöllö*, Finnish.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 34; Kjærb. Orn. Dan. 2nd Suppl. taf. 1; Fritsch, Vög. Eur. taf. 12. fig. 6; Naumann, Vög. Deutschl. Nachtrag, taf. 349; Sundevall, Svensk. Fogl. pl. 24. fig. 1; Gould, B. of Eur. pl. 42; Susemihl, Vög. Eur. taf. 40; Sparrman, Sv. Orn. taf. 4; Pall. *l. c.*

♀ *ad.* suprà saturatè cinereo-fusca, albido notata et irregulariter fasciata: scapularibus albis, centraliter fusco striatis et vix eodem colore notatis: remigibus saturatè cinereo-fuscis albido conspicuè fasciatis, fasciis griseo-fusco vermiculatis et in pogonio interno fulvido lavatis: caudâ cinereo-fuscâ, indistinctè fusco-albido fasciatâ et saturatè fusco terminatâ: facie cinereâ circulis concentricis fuscis: oculis maculâ semilunari nigrâ anticè semicircumdatis: mento nigro-fusco: corpore subtùs albo, maculis longitudinalibus fuscis: pedibus usque ad ungues plumatis, sordidè albis, fusco undulatis: rostro flavo-corneo: iride flavidâ.

Pull. suprà saturatè fusco fumosus, chocolatino tinctus, pileo fere immaculato: corpore suprà inconspicuè albido notato: corpore subtùs fusco fumoso, albido angustè fasciato: alis et caudâ quam in adulto saturatioribus: remigibus externis indistinctè griseo-fusco fasciatis.

Adult Female (Skara, Sweden, 6th March, 1870). Upper parts dark ashy brown blotched and irregularly barred with white, the scapulars white with a central stripe and a few blotches of brown; quills dark ashy brown broadly barred with dull white, these whitish portions slightly vermiculated with greyish brown, those on the inner web washed with fulvous buff; tail ashy brown broadly terminated with dark

brown and crossed by five indistinct whitish bands marbled with ashy brown; facial disk greyish white narrowly but very regularly barred with dark brown; space round the inner and upper part of the eye blackish; margin of the disk chocolate-brown mottled with white, this latter colour most conspicuous on the lower part; chin blackish brown; underparts dull white streaked with dark brown; legs greyish white narrowly barred with greyish brown; bill yellowish horn; iris light yellow. Total length about 27 inches, culmen 1·9, wing 18·0, tail 12·8, tarsus 2·55.

Nestling (Sarai-Gor, Ob, 10th July, 1876). Upper parts very much darker than in the adult, dull (almost sooty) chocolate-brown; the head covered with close dark feathers very slightly tipped with whitish brown; upper parts very little marked with white; facial disk scarcely defined; underparts sooty brown closely barred with dull white; wings and tail much darker than in the adult, the outer primaries only indistinctly barred with dull greyish brown.

This, one of the rarest of the Owls inhabiting the Palæarctic Region, is almost entirely confined to the more boreal districts, where it is a resident in the upper portions of the forest belt, but rarely straggling down into the northern parts of Central Europe. It has not been met with in Great Britain, Greenland, or Iceland; but it is found throughout the northern portion of the Scandinavian peninsula. Mr. Robert Collett, in his notes on the ornithology of Norway, says that "almost every year an individual of this species is killed here and there in the south of the country, where it has occurred on the Hval Islands, near the Swedish coast. A female, emaciated and apparently sterile, was shot near Christiania towards the end of March 1870. As a breeding bird it is doubtless confined to the wooded districts along the Swedish and Finnish frontier in Nordland and Finmark. In East Finmark it has been found several times of late years, the last time in the summer of 1866."

According to Nilsson it is not uncommon in Ångermanland and Jemtland, and around Lycksele and Sorsele in Umeå Lappmark, being more numerously met with in seasons when the lemmings are abundant. It is a resident in the north, only straggling south exceptionally. One was shot in November 1844 in the south-eastern corner of Dalecarlia; another at Fiholmen, in Södermanland, on the 25th September 1825; a third is recorded by Hammargren (K. Vet. Ak. Handl. 1853, p. 121) as having been shot on the north side of the Wener lake, in Wermland; and a fourth was drowned in the Wener in the autumn of 1855. Professor Lilljeborg says that three females were killed in a forest near Upsala in the winter of 1859–60; and Sundevall, who states that it straggles down to Södermanland, Nerike, Wermland, &c., adds that, according to Mr. Dyrh, an apothecary at Skelleftea, five of these Owls frequented a wood about half a Swedish mile from that town late in August 1851.

In Finland, according to Von Wright, it is of very rare occurrence, and he cites only two instances of its having been met with—one shot on Esbo Karlö on the 18th August 1846, and a second obtained in Kyrkslätt on the 5th April 1858. The latter bird I saw in the flesh, as I happened to be at Helsingfors when Von Wright received it.

In Northern Russia it is said to be not uncommon. Meves did not obtain it when there; but he says that there are several specimens in the Archangel Museum. According to Mr. Sabanäeff, Mr. Martin met with it about thirty versts from the Poleffsky Zavoda; and Meshakoff states that it breeds in the Vologda Government, but he himself never met with it in the Ural.

Tyzenhauza obtained it in Lithuania; and Mr. Taczanowski states (Bull. Soc. Zool. 1877, p. 137) that Mr. Wankowicz met with it in the forests of Borysow, and subsequently it was seen in the Grodno Government close to the Polish frontiers. In December 1872 one was shot between Chelm and Krasnystaw, in the Lublin Government, and is now in the Warsaw Museum. It is included in Naumann's Naturg. Vög. Deutschl.; and he says (xiii. p. 186) that "it straggles over to Prussia, and is stated to have occurred several times near Gumbinnen. It has even occurred, it is said, in Northern Germany." Gloger, however, writes (Naturg. Vög. Eur. i. p. 111) that *one* was obtained in the district of Gumbinnen, in Prussia, in the autumn of 1832. Elsewhere in Europe, so far as I can ascertain, it has not been obtained. It is found in Northern Asia; but there it is also of rare occurrence. Neither Von Middendorff nor Von Schrenck met with this Owl; but Dr. Radde, who says that it is the rarest species in South-east Siberia, obtained one early in November 1858 in the Bureja Mountains, which, he adds, agreed closely with European examples. Dr. Dybowski writes (J. f. O. 1872, p. 350), it is "not common; but it is to be seen almost in every valley in summer as well as in autumn. It breeds in the forests of the Pachabicha and Muryn valley, from which place we obtained young ones; the nest itself we could not detect. The specimens obtained are from the vicinity of Irkutsk." Dr. Finsch on his journey to Siberia obtained two young birds on the river Ob, one of which he has lent to me to figure.

The first published notice of the breeding-habits of the present species appears to be that communicated by Mr. C. G. Löwenhjelm, who states (K. Vet. Ak. Handl. 1843, p. 389) that "the nest was in a dense pine-wood on a stump about three ells high, in the top of which a hollow had been formed by the wood having rotted. In the nest was one white egg about the size of that of the Eagle-Owl; and at the foot of the stump another egg was on some moss, quite uninjured." Subsequently Mr. Wolley obtained its eggs in Kemi Lappmark in 1856, and says (Ooth. Wolleyana, p. 173) that "the nest was on the top of a broken trunk of a Scotch fir, the main part of which hung down; but from the description Piety thinks there was some old nest there. He does not remember seeing any nest made. It was not high up, some two fathoms perhaps; but those which he has seen before were not more than one fathom high. The top of the tree where it was broken off, was not level, but it had a great splinter on one side. The birds are very bold at the nest, and the cry of the cock attracts people to the nest. The cry is three notes drawn out, the first hardest, the second lighter and short, the third lightest and longest of all—'*HU, HU, hu-u-u.*'" Another nest, taken at Muoniovara on the 5th April 1857, was, he adds, "made of sticks and all kinds of stuff inside, about three fathoms and a half high up in a large Scotch fir, where it divided into several great forks. It was not like a new nest;" and he describes it as about two feet in thickness.

I possess several eggs of this Owl received from Mr. Wolley's collectors in Lapland, which are pure white, and resemble the eggs of the Snowy Owl, but appear a trifle less smooth on the surface of the shell. In size they vary from $2\frac{1}{40}$ by $1\frac{27}{40}$ to $2\frac{5}{40}$ by $1\frac{29}{40}$ inch.

Retzius (*l. c.*) appears to have been the first to publish a description of the present species under the name of *Strix lapponica*; but he refers to Sparrman as the original describer of the species, and gives as his reference "Mus. Carls. fasc. 5. tab.;" but so far as I can ascertain, no fasciculus 5 of that work was ever published, and the earliest plate of this Owl I can find is that

issued, without letterpress, in Sparrman's 'Svensk Ornithologie,' of which one part appears to have been published in 1806.

Amongst the synonyms I have included *Strix microphthalmos* of Tyzenhauza, without, however, having been able to consult his 'Ornithologia Powszechna.' I may, however, add that Mr. Taczanowski, in a letter to me respecting this Owl, says that it was first described and figured under that name in the annals of the Warsaw Society in 1829 (?); but he fails to give me the exact reference. Mr. Sharpe, I observe, in his synonymy of the present species (Cat. Strig. Brit. Mus. p. 254) includes *Strix fuliginosa*, Shaw, Gen. Zool. vii. p. 245; but this name was certainly founded on the Sooty Owl of Pennant, and Cinereous Owl of Latham, and it must therefore be placed amongst the synonyms of *Syrnium cinereum* (Gmel.).

The American representative of the present species (*Syrnium cinereum*) has by many authors been united with the Lapp Owl; but I quite agree with my friend Mr. Sharpe in keeping them apart. I have compared several specimens from America with the series from Lapland; and I find that the American bird is much darker, and the streaks on the breast are much less distinctly defined. One may call the markings on the American bird white on a brown ground, the brown colour greatly predominating; whereas in the European bird they are brown on a white ground, the latter colour predominating. The European bird has also a white patch at the base of the primaries, on the under surface of the wing, caused by the white bars being much broader than in *Syrnium cinereum*. This American form inhabits Arctic America, being very rarely met with in the United States, and only in winter.

The specimens figured are the adult and young birds above described, the former of which is in my own collection; and for the loan of the latter I am indebted to Dr. Otto Finsch.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Skara, Sweden, March 6th, 1870 (*W. Meves*). *b*, ♂. Archangel (*Piottuch*).

E Mus. Norv.

a, ♂. Nullusjärvi, Finnish Lapland. *b*, ♀. Peldouoma, Finnish Lapland. *c*. Palajoki. *d*, *e*. Kurkiovaara, Finnish Lapland. *f*. Sallanki. *g*. Kuru. *h*, *i*, *k*, *l*. Kourlukko. *m*. Finnish Lapland (*all collected by the late J. Wolley*).

E Mus. Dr. O. Finsch.

a, *pull.* Sarai-Gor, river Ob, July 10th, 1876 (*O. F.*).

Genus NYCTEA.

Strix apud Linnæus, Syst. Nat. i. p. 132 (1766).
Noctua apud Cuvier, Règne An. i. p. 332 (1817).
Nyctea, Stephens in Shaw's Gen. Zool. xiii. pt. 2, p. 62 (1826).
Syrnium apud Kaup, Natürl. Syst. p. 59 (1829).
Surnia apud Selby, Ill. Brit. Orn. i. p. 95 (1833).
Nyctia apud Swainson, Classif. of B. ii. p. 217 (1837).

This genus contains a single species (*Nyctea scandiaca*), which inhabits the northern portions of the Palæarctic and Nearctic Regions, breeding in the high north, and migrating south during the winter. Full particulars of its habits and nidification are given in the following article.

This bird, which is consequently the type of the genus, has the beak moderate in size, decurved from the base, the lower mandible notched; nostrils large, oval, placed in the anterior part of the cere, which is short; bill nearly concealed by long, close, stiff feathers; facial disk incomplete; head large, round, without visible ear-tufts; orifice of ear moderate, without operculum; wings moderately long, broad, and full, the first quill about equal to the fifth, the third longest; tail moderate, nearly even or slightly rounded; legs and feet closely covered with long hair-like feathers; claws rather long, moderately curved, acute.



SNOWY OWL.
(Young)
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SNOWY OWL.

NYCTEA SCANDIACA

NYCTEA SCANDIACA.

(SNOWY OWL.)

Bubo scandianus, Rudebeck, Icon. ined.
Strix capite aurito, corpore albido, Linn. Faun. Suec. p. 16. no. 42 (1746), ex Rudeb.
Strix scandiaca, Linn. S. N. i. p. 132. no. 2 (1766), ex Linn.
Strix nyctea, Linn. tom. cit. p. 132. no. 6 (1766).
Wapacuthu Owl, Pennant, Arctic Zool. ii. p. 231. no. 119, "Hudson's Bay" (1785).
Strix wapacuthu, Gm. S. N. i. p. 291. no. 27 (1788), ex Pennant.
Strix arctica, Bartram, Travels, p. 289 (1791).
Strix nivea, Thunberg, Sv. Ak. Handl. 1798, p. 184.
La Chouette blanche, Levaillant, Ois. d'Afr. i. p. 174. pl. 45 (1799).
Strix bubo (var. G) *albus*, Daudin, Tr. d'Ornith. ii. p. 210 (1800), ex Linn.
Strix nivea, Daudin (*mot. propr.*), tom. cit. p. 190 (1800), ex Levaillant.
Strix candida, Latham, Ind. Ornith. Suppl. p. xiv. no. 3 (1801), ex Levaillant.
Ermine Owl, Latham, Synop. Suppl. ii. p. 60. no. 7 (1802), ex Levaillant.
Strix erminea, Shaw, Gen. Zool. vii. pt. i. p. 251 (1809), ex Latham.
Noctua nyctea (Linn.), Cuvier, Règne An. i. p. 332 (1817).
Noctua nyctea (Linn.), F. Boie, Isis, 1822, p. 770.
Nyctea erminea (Shaw), Stephens, Gen. Zool. xiii. pt. ii. p. 63. no. 1 (1826).
Nyctea? *wapacuthu* (Gm.), Stephens, loc. cit. no. 2 (1826).
Syrnium nyctea (Linn.), Kaup, Entwickelungsgesch. europ. Thierw. pp. 59, 190 (1829).
Strix nyctea (Linn.), Swainson, Faun. Bor.-Amer. *Aves*, p. 89. no. 24 (1831).
Strix nyctea, Linn., Pallas, Zoogr. Rosso-Asiatica, i. p. 312 (1831).
Surnia nyctea (Linn.), Selby, Ill. Brit. Orn. i. p. 95 (1833).
Noctua nyctea (Linn.), C. L. Brehm, Isis, 1834, p. 240.
Noctua nivea (Linn.), C. L. Brehm, tom. cit. p. 246 (1834).
Nyctia candida (Latham), Swainson, Classif. Birds, ii. p. 217 (1836).
Strix nivea, Thunberg, Zawadzki, Faun. galizisch-bukowinischen Wirbelth. p. 45 (1840).
Syrnia nyctea (Linn.), Macgillivray, Hist. Brit. Birds, iii. p. 407 (1840).
Nyctea nivea (Thunberg), G. R. Gray & Mitch. Genera of Birds, i. p. 34 (1844–49).
Nyctea nivea (Daudin), Bp. Consp. i. p. 36 (1850).
Nyctea nivea (Stephens), C. L. Brehm, Vogelfang, p. 35 (1855).
Nyctea candida (Bp.), C. L. Brehm, loc. cit. (1855).
Surnia nyctea (Linn.), Kaup, Tr. Z. S. iv. pt. 6. p. 214 (1859).
Nyctea nivea (Daudin), Baird, Birds N. Amer. p. 63 (1861).
Nyctea nivea europæa, A. Brehm, Verz. Samml. v. C. L. Brehm, p. 2 (1866).
Nyctea nivea americana, A. Brehm, loc. cit. (1866).
Nyctea scandiaca (Linn.), A. Newton, Yarrell, Brit. Birds, 4th ed. pt. iii. p. 187 (1872).

(The above by Lord Walden.)

Surnie Harfang, French; *Schnee-Eule*, German; *Harfang*, *Snee-ugle*, Danish; *Fjelluggla*, *Harfang*, Swedish; *Sneugle*, *Kvitörn*, Norwegian; *Tunturipöllo*, Finnish; *Sowa-biala*, Polish; *Beloi-filin*, *Sowa-bielaya*, Russian; *Ak-uku*, Bashkir; *Edshia Pelin*, Ziranin.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 458; Werner, Atlas, *Rapaces*, pl. 35; Kjærb. Orn. Dan. taf. vi.; Fritsch, Vög. Eur. pl. 12. fig. 4; Sundev. Sv. Fogl. pl. xxiv. fig. 3; Gould, B. of Eur. pl. 43; id. B. of G. B. i. pl. xxxiv.; Naumann, Vög. Deutschl. taf. 41; Schlegel, Vög. Nederl. pl. 44; Edwards, Birds, pl. 61; Levaill. Ois. d'Afr. t. 45; Wilson, Am. Orn. iv. pl. 32. fig. 1; Aud. B. of Am. pl. 121. 8vo ed. i. pl. 28; Nat. Hist. New York, Birds, pl. 9. fig. 20.

♂ *ad.* albus: pileo, dorso et remigibus versùs apicem vix fusco notatis: rostro et unguibus nigricantibus: pedibus usque ad ungues plumis densissimè tectis: iride flavâ.

♀ *ad.* mari similis, sed major, alba, suprà nigro-fusco fasciata, subtùs eodem colore undulata: fronte, facie, gulâ et gutture, abdomine imo, tibiæ et tarsi plumis albis.

Adult Male (Tarei-nor, Siberia, 7th May). Pure white, marked only very slightly (almost imperceptibly) on the crown, on the back and towards the tips of the primaries with dull dark brown; underparts pure white, without a spot of colour; plumage soft and full; legs and feet covered down to the claws with long dense hair-like feathers; bill and claws blackish horn; iris deep yellow. Total length 20 inches, culmen 2·25, wing 16, tail 8·8, tarsus 2·4

Female (Calais, Maine, U. S.). Entire upper parts white, tolerably closely barred with blackish brown; forehead, feathers round the eye, throat to the fore part of the breast, lower part of the abdomen, and feathers on the legs and feet pure white; rest of the underparts barred with blackish brown, the bars being smaller than on the back. Culmen 2·6 inches, wing 17·8, tail 10·6, tarsus 2·5.

Nestling (Davis Straits). Head, neck, fore part of the back, and underparts covered with dark sooty brown down; feathers round the eye white, and the down under the wing, to a small extent on the centre of the abdomen, and likewise the feathers on the legs and feet, which latter are quite short, also pure white; on the nape are a few blackish brown feathers, barred with white; feathers on the back, scapulars, and wing-coverts white, more or less barred with blackish brown; quills white, the primaries slightly marked with blackish brown; tail pure white, the central feather only slightly marked with dull brown; on the breast and flanks are also a few white feathers, barred with dark brown, showing amongst the down.

Obs. The Snowy Owl varies exceedingly in the amount of dark markings on its plumage, some specimens being much barred, whereas others are almost pure white; the male I have figured being at the first glance pure white, the markings being very slight and pale. Judging from the series I have examined I infer that the male bird is at all times much whiter than the female; and it is a curious circumstance that the feathers on the young nestling in my collection are much whiter than those in some of the mature birds, the tail being almost pure white. Wheelwright held that the female is whiter than the male; but my experience leads me to the opposite conclusion, as all the males I have examined are whiter than the females. In size the males vary as follows—culmen 2·1 to 2·3, wing 15·8 to 17·5, tail 8·2 to 9·6, tarsus 2·3 to 2·5; and the females—culmen 2·2 to 2·6, wing 17·5 to 17·9, tail 8·8 to 10·6, tarsus 2·3 to 2·6.

3

This Owl is essentially a bird of the extreme north, frequenting the Arctic regions of both hemispheres, only straggling southward during the winter season. In Great Britain it occurs from time to time, and, as may be surmised, is met with more frequently in the northern portions of our islands. First recorded as a British bird by Dr. Edmonston in 1811, he having found one hung up as a scarecrow in the Shetland Islands, it has since been so often met with in the west of Scotland that Mr. R. Gray considers (B. of W. of Scotl. p. 62) that "it may almost be regarded as a regular spring visitant to the Outer Hebrides. In the Island of Lewis, especially, it is frequently seen and shot; and specimens have also from time to time occurred in Harris, North Uist, and Benbecula. In the last-named island one was shot in June 1863 by Mr. J. Ferguson, surgeon, at that time resident there. Sir James Matheson has informed me that in the course of a single season, some years ago, several were shot in Lewis. Three or four were observed there in the spring of 1868; and one of these was shot on the 21st of April by Kenneth Hosack, the keeper at Gress. This bird was seen daily in company with another Snowy Owl, frequenting the farm of Galson, near Ness, for more than two weeks; and the survivor afterwards disappeared for a time, but was seen again at the same farm on the 8th of May. Mr. John Munro, the keeper at Marybank Lodge, Stornoway, informs me that a fine specimen was obtained at North Tolsta in the beginning of April 1867, and adds that the species occurs in the island every spring. In localities nearer the mainland the Snowy Owl has been met with in Skye in several instances, in Mull, and in Iona; while on the mainland itself it has been shot in Caithness (1850), Sutherlandshire (July 1863), Inverness (Lockness, October 1868), Ayrshire (Kilmarnock, February 1863), Renfrewshire (December 1863). Two specimens, both young birds, were obtained in the Clyde in the same year—one near Port Glasgow, the other at Pollokshields, near the city of Glasgow. One was seen during the months of October and November 1868 in the neighbourhood of Ben Lomond. It made frequent descents to the low grounds, and appeared to live chiefly upon Grouse. Having examined altogether between twenty and thirty Scottish specimens of this beautiful Owl, in the various collections which I have visited, I find that the number of young and old birds is about equal. Those taken on the west coast are probably migrants from Canada. Very large flights have, in fact, been observed by the masters of vessels trading between America and this country.

"On the eastern side of Scotland the numbers that occur there are probably natives of Northern Europe, as it is only after severe north-easterly gales that they are met with. Since the beginning of the present century the species has been a well-known visitant to Orkney and Shetland. In May and June 1864 several were observed in the Island of Uist. Three were shot; and one of these is now in the possession of Dr. Saxby." In the north of England it has occurred several times. Professor Newton records (*op. cit.*) three instances of its having been met with in Northumberland; and Mr. H. Denny (P. Z. S. 1837, p. 45) states that a male was captured at Selby, in Yorkshire. In Norfolk it has occurred several times, as recorded by Mr. H. Stevenson, who writes (B. of N. p. 57) that, "according to Hunt, one was shot at Felbrigg during the spring of 1814; and he adds, 'the weather had been previously exceedingly severe during nearly three months. This specimen, we are informed by the Rev. G. Glover, was presented to Lord Stanley. It had been observed for several days standing on a heap of snow which had been blown against a fir; it had been often roused, and was at length taken with

difficulty.' The same author subsequently recorded a second example in his 'list of Norfolk birds,' published in Stacey's 'History of Norfolk,' which was said to have been shot at Gunton, near Cromer, in January 1820, and came into the possession of the late Lord Suffield. From that time I am not aware of any notice of its appearance on our coast until the summer of 1847, when, as Mr. Gurney informs me, a specimen, shot by a gamekeeper at Beeston, on the estate of Mr. J. G. Hoare, was, *horribile dictu*, seen by that gentleman hanging up as a scarecrow, and too much spoilt for preservation. On giving directions, however, that if any such bird should occur again, it was to be sent to him in the flesh, Mr. Hoare received in 1848 the beautiful Greenland Falcon from the same locality, already referred to in the present work. In the early part of 1847 a large White Owl was more than once observed in the neighbourhood of Brooke; and in 1849–50 no less than three specimens were met with in different parts of the county in the short space of half a year, as stated by Mr. J. H. Gurney in the 'Zoologist.' Of these the first was seen, but not shot, at Swannington during the autumn of 1849; the second, an immature male, was shot by Mr. Cremer, at Beeston, on the 22nd of January, 1850, the same village where this species had occurred just three years before; and the third, a young male, though somewhat more advanced in plumage, was killed at St. Faith's by Mr. Reynolds in February of the same year. The two latter are preserved in Mr. Gurney's collection in Catton Park. The late Mr. S. Miller, of Yarmouth, had also a specimen of this noble bird, which, if not obtained in this district, was most probably British-killed." In Suffolk it has, Professor Newton writes (*l. c.*), been once obtained; and Mr. Brooking Rowe records the occurrence of one (which is now in the Albert Museum at Exeter) at Exmouth, which, he adds, looks as if it had escaped from captivity.

In Ireland it is stated by Thompson (B. of I. i. p. 95) to have been met with in 1812 and 1827; and he himself saw specimens killed in the winters of 1834–35 and 1837–38. The specimens to which he especially refers are:—one obtained in Antrim in 1835; one seen at Bruslee, county Antrim, in the same month; one shot in the county of Mayo in March, others having been obtained about the same time in other parts of Ireland; one obtained in the county of Longford in April; and one said to have been shot about 1835 near Omagh, in the county of Tyrone.

It is found commonly in some parts of Greenland, more numerous in the northern than in the southern districts, and is not unfrequently seen in Iceland during the winter, though but rarely seen in the summer. It has also been obtained several times on the Færoes. In Scandinavia it is found throughout the year; and the eggs have lately been obtained from various parts of Norway and Sweden. My friend Mr. Robert Collett states that "not a few breed on the fells above the tree-growth, both in the Dovre and the Langfjeldene down to Christiania stift; but it is most common in the far north, where, according to Sommerfelt, it is occasionally very numerous in East Finmark. In the winter it migrates southwards, especially when Lemmings are numerous, and then appears in the lowlands. Some seasons they have been observed near Christiania throughout the winter. All those that have been shot in the lowlands during the autumn and winter seem to have been young birds." Dr. Sundström sends me a long account of the migrations of this species in Sweden, which he states are governed by those of the Lemmings; and he remarks that most of the specimens obtained near Upsala have been immature

females, from which he infers that the young birds wander more than the old ones. In Finland, as in Sweden, it occurs more frequently in the northern portions of the country, though during severe winters seen also in the south; when at Uleåborg I procured a very fine adult male near that town in the late autumn, and saw specimens which had been shot in Central Finland. It has been met with as far north as Spitsbergen, where Professor Malmgren obtained a specimen in 80° 10′ N. lat., between Verlegen Hook and Shoal Point, in July 1861, this bird being now in the Stockholm Museum. Professor Newton referring to this specimen writes (Ibis, 1865, p. 501) that "this is the only recorded instance of the Snowy Owl having been met with in Spitsbergen; but Stabbel, our pilot, told me he had known of its occurrence there previously—I think he said on the eastern coast." It occurs in Novaya Zemlya, where, Mr. Gillett states (Ibis, 1870, p. 305), it is "very common all along the coast. I never saw this bird attempt to feed on blubber or carrion; indeed I never saw it on the ice at all; but it is possible that, in the winter, or when pressed by hunger, it may occasionally pick up offal, as Admiral von Wrangell has asserted. My impression is that it lives a good deal on young sea-fowl and Arctic Foxes. Lemmings no doubt are its favourite food; but I saw no traces of any great quantity of them in Novaya Zemlya, nor did I see a single live one. In some places, however, there were their burrows and a few dried remains. I shot three Snowy Owls in various localities. They were all remarkably fat, having a thick hard layer under the skin, answering to the blubber of a Seal. Their stomachs were empty."

In Northern Russia it is common, and is especially so in the wilder portions of the Archangel Government, near the town of that name, and breeds on the tundras not far from Archangel. I have lately received several very handsome specimens shot near that town, all in adult plumage. Mr. L. Sabanäeff writes to me that "it breeds in the Government of Jaroslaf, and a young bird was brought from Podolsk. It is distributed throughout the Perm Government, more common towards the north, and breeds on the open plains near Shadrinsk."

It occurs, Mr. Taczanowski informs me, "in Poland during the winter, but is rare. The winter of 1858–59 was remarkable from the unusually large numbers which occurred in different parts of the country." According to Tyzenhauz it arrives in the autumn in Lithuania, and winters there. According to Borggreve it "occasionally visits North Germany, more especially the coast-region. Gloger and Tobias record its occurrence in Silesia and Oberlausitz; and it was comparatively common in Pomerania in the winters of 1865–66 and 1858–59." Mr. Wiese (J. f. O. 1860, p. 214), referring to the irruption of these Owls in the winter of 1858–59, says that about sixty were obtained near Königsberg alone. It has occurred as far south as Bohemia, where, according to Fritsch (J. f. O. 1871, p. 182), one was obtained in March 1862, and a second by Hoffmann in the autumn of 1864 from Hradisko, near Sadska, also in Bohemia. Zittwitz also (*fide* v. Homeyer, J. f. O. 1870, p. 217) states that Seiffertitz obtained one alive from near Herzberg. Mr. Fischer writes that lately this species has appeared in Denmark almost every winter, and in the winter of 1865–66 several were shot. Professor Blasius (Ibis, 1862, p. 65) records it from Heligoland; and it has occurred in Holland four times since 1806. De la Fontaine refers to a specimen preserved in the Luxemburg collection, which was killed near Kopstal in 1857; and Messrs. Degland and Gerbe record it as "of occasional and very rare occurrence in France and Belgium."

To the eastward the Snowy Owl occurs throughout Siberia down to Murdan, where it was

obtained by one of Mr. A. O. Hume's collectors. Pennant (*op. cit.*) states that it is found in the latitude of Astrachan. Von Middendorff found it common in the Taimyr country up to the Arctic Ocean. Von Schrenck records it as found in the Amoor in winter; but he never met with it in the summer season. He obtained one specimen from the village of Tylm, on the Lower Amoor, in January. Dr. Radde says that it is common in Mongolia, but only in the winter; and on the 27th of April he observed but few on the Tarei-nor, though he obtained a very old male as late as the 7th of May (25th of April, O.S.). In the wooded districts it was very rare, but numerous on the bare elevated steppes of the Transbaikal country, where it feeds on the piping hare (*Lagomys ogotona*), and becomes excessively fat. Respecting its occurrence in India, Mr. A. O. Hume writes (Ibis, 1872, p. 410) that he had "repeatedly received information of the occurrence in the cliffs overhanging the Cabul river and other localities at the western extremity of the Peshawur valley of a huge White Owl; but it never occurred to me that this could be the Snowy Owl, considering the geographical position of the Peshawur valley, which hardly passes 34° north latitude. The acquisition of this specimen sets the matter at rest. The bird measured in the flesh by Dr. Johnson was a male. My shikaree, who was with Dr. Johnson, and who has now returned to me, reports having seen several other and some much larger specimens. The occurrence of this species, apparently as a permanent resident (for the bird was killed on the 3rd March), in the mountains separating Afghanistan from the Peshawur valley appears to me to be a most noteworthy fact."

In America the Snowy Owl is common, and resident in the fur-countries. Professor Spencer F. Baird records it as "resident in Canada (*Dr. A. Hall*), Greenland (*Holböll*), South Carolina, Kentucky (*Audubon*), Bermuda (*Jardine*)." I met with it not unfrequently during the winter in New Brunswick, and obtained several specimens there. Captain Blakiston (Ibis, 1863, p. 50) observed it in the neighbourhood of the forks of the Saskatchewan in November; and Mr. Ross found it breeding on the Mackenzie. Mr. Dall, writing on the birds of Alaska, states that he "got from Takitesky, near Nulato, a fine female, April 27th, 1867. Mr. Thomas S. Denison collected at Egowik, Norton Bay, a male of this species during the month of April 1867. This species is rather rare in the valley of the Lower Yukon; but I have seen it twice flying over the ice in the winter-season. It flies quite readily during the day, and is very alert and active, seldom waiting for one to get in range." It is also recorded by Mr. R. Brown (Ibis, 1868, p. 419) from Vancouver's Island.

To the southward it has been known to straggle into Texas, where, as my friend the late Dr A. L. Heermann informed me, a single specimen was shot near San Antonio about three years before the war. It has occurred on the Bermudas, where, according to Wedderburn (v. Martens, J. f. O. 1859, p. 212), it was seen in the autumns of 1843 and 1853; and it has been recorded by the Duke of Würtemberg as having occurred in Cuba; but Dr. J. Gundlach (J. f. O. 1861, p. 43) strongly denies this, and states that *Strix furcata* was mistaken for the present species.

Dr. Elliot Coues has sent the following notes on its geographical distribution in the United States:—"Although this bird is fitted to endure the regions of highest latitudes, having the thick clothing of the very extremities that characterizes the most boreal mammals and birds, and the whiteness of plumage (in a degree shared by no other of its family) that likewise so strongly

indicates a dweller in the coldest climates, yet its southward distribution in winter is very extensive—more so than would have been anticipated. It reaches considerably lower latitudes than its near relative the Hawk Owl ever descends to; and I am inclined to think, from what I have read npon the subject, that its range in winter, in the United States, is decidedly beyond the parallel of latitude it is known to reach in Europe. You are certainly prepared for these statements after your own encounter with the Snowy Owl at San Antonio, in Texas, and after its well-known quotation from Bermuda by Sir William Jardine. I have it down in my South-Carolina list (Proc. Bost. Soc. Nat. Hist. xii. 1868, p. 120) on the authority of Professor R. W. Gibbs, who, however, went to Audubon for his. But, without multiplying references, in this case quite unnecessary, I may simply say that we have advices of this bird from *almost* every State in the Union—the only notable exceptions being those of the extreme southern frontier and California. It is, indeed, given in Cooper's late work on the ornithology of this last-named State, but, as in the instance of the Hawk Owl and many others, upon a presumption of its occurrence. It is singular that we have no account of the species from the territories west of the Mississippi, especially from Washington and Oregon, where one would think it must certainly occur. But such appears to be the case, and is only explicable upon two theories: one is, that at the season of the year when the explorations of that wild country are almost necessarily undertaken, the bird is in its northern home; the other, that the species usually comes further south, and in greater numbers, along the Atlantic States than in the west. I am myself inclined to give weight to the latter supposition, though it rests as yet upon negative evidence. In New England, and thence into the Middle Atlantic States, the Snowy Owl may *sometimes* be called a common bird in winter. Thus in the neighbourhood of Philadelphia, Mr. Cassin says, it is sometimes so numerous that specimens sell in the market for a mere trifle. But, like other wanderers from the far north, as the vagrant hordes of Waxwings, Longspurs, Crossbills, &c., its appearance is so irregular that evidently we have here another case of a forced flank movement, like that of the Hawk Owl, dependent upon vicissitudes of the weather and a precarious state of the larder. It is pretty certain that the movement is not a true periodic migration, moreover, from the accounts that reach us of the bird's remaining in the higher latitudes the year round. Thus Mr. Dall has lately reported that he saw it flying over the frozen Yukon in midwinter (Trans. Chicago Acad. i. p. 273). When it does visit us, the chances are largely against its ever seeing home again; for by a sort of fatality it seems to be led into thickly settled districts, and of all the larger birds has the most unfortunate knack of getting into towns, when its size and colour render concealment impossible; and who could refrain from a fair shot at a Snowy Owl? In New England the standard winter quotations of this bird are in some instances enlarged to include other months of the year. Mr. Allen writes to this effect in his Massachusetts List (Proc. Essex Inst. iv. 1864, p. 97):—'A specimen of the Snowy Owl,' he says, 'was taken in Springfield, the present year, about May 20th. Another instance of its capture here late in May has occurred within a few years. It has been found here repeatedly in November, and consequently spends at least half the year here.' Now the month of May, as you know, is well into the breeding-season of *Strigidæ*; and although Mr. Allen is prudently silent in the matter, yet he says enough to make us expect something from Maine advices. Nor are we at fault; Mr. G. A. Boardman makes this entry in the Boston Society's Proceedings (vol. ix. p. 123), from

Calais, Maine:—'Snowy Owls. Winter. Not common. A pair seen this spring, the last of May; probably had a nest.' Although we must not, on the strength of this, declare that the Snowy Owl breeds in the United States, yet the probability almost amounts to certainty. And thus, although this species decidedly exceeds the Hawk Owl in extent of its winter peregrinations, the southern limits of the breeding-range of the two birds will doubtless prove to tally to a nicety."

The Snowy Owl frequents the open, treeless, and desolate parts of the northern latitudes, never appearing to inhabit localities which are covered with forest-growth. Its movements are chiefly regulated by those of the Lemmings, which it follows on their migrations, and on which it principally feeds. It is a somewhat shy bird, and not easy to approach within gun-shot. Audubon (B. of A. i. p. 113) gives some very graphic notes on its habits, which I transcribe as follows:—"The Snowy Owl hunts during the day, as well as in the dusk. Its flight is firm and protracted, although smooth and noiseless. It passes swiftly over its hunting-ground, seizes its prey by instantaneously falling on it, and generally devours it on the spot. When the objects of its pursuit are on wing, such as ducks, grouse, or pigeons, it gains upon them by urging its speed, and strikes them somewhat in the manner of the Peregrine Falcon. It is fond of the neighbourhood of rivers and small streams having in their course cataracts or shallow rapids, on the borders of which it seizes on fishes, in the manner of our wild cat. It also watches the traps set for musk-rats, and devours the animals caught in them. Its usual food, while it remains with us, consists of hares, squirrels, rats, and fishes, portions of all of which I have found in its stomach. In several fine specimens which I examined immediately after being killed, I found the stomach to be extremely thin, soft, and capable of great extension. In one of them I found the whole of a large house-rat, in pieces of considerable size, the head and the tail almost entire. This bird was very fat; and its intestines, which were thin, and so small as not to exceed a fourth of an inch in diameter, measured $4\frac{1}{2}$ feet in length.

"Scarcely is there a winter which does not bring several of these hardy natives of the north to the falls of the Ohio at Louisville. At the break of day, one morning, when I lay hidden in a pile of drift-logs at that place, waiting for a shot at some wild geese, I had an opportunity of seeing this Owl secure fish in the following manner:—While watching for their prey on the borders of the 'pots,' they invariable lay flat on the rock, with the body placed lengthwise along the border of the hole, the head also laid down but turned towards the water. One might have supposed the bird sound asleep, as it would remain in the same position until a good opportunity of securing a fish occurred, which I believe was never missed; for, as the latter unwittingly rose to the surface, near the edge, that instant the Owl thrust out the foot next the water, and, with the quickness of lightning, seized it, and drew it out. The Owl then removed to a distance of a few yards, devoured its prey, and returned to the same hole; or, if it had not perceived any more fish, flew only a few yards over the many pots there, marked one, and alighted at a little distance from it. It then squatted, moved slowly towards the edge, and lay as before, watching for an opportunity. Whenever a fish of any size was hooked, as I may say, the Owl struck the other foot also into it, and flew off with it to a considerable distance. In two instances of this kind, I saw the bird carry its prey across the Western or Indiana Shute, into the woods, as if to be quite out of harm's way. I never heard it utter a single note on such occasions, even when two birds

joined in the repast, which was frequently the case when the fish that had been caught was of a large size. At sunrise, or shortly after, the Owls flew to the woods, and I did not see them until the next morning, when, after witnessing the same feats, I watched an opportunity, and killed both at one shot. An old hunter, now residing in Maine, told me that one winter he lost so many musk-rats by the Owls, that he resolved to destroy them. To effect this, without loss of ammunition, a great object to him, he placed musk-rats caught in the traps usually employed for the purpose, in a prominent spot, and in the centre of a larger trap. He said he seldom failed, and in this manner considerably 'thinned the thieves' before the season was over. He found, however, more of the Great Grey Owl (*Strix cinerea*) than of the Snowy Owl. The latter he thought was much more cunning than the former."

I do not know that the fishing-propensities of this Owl have been remarked here in Europe; but I can, from personal observation, confirm what Audubon writes, as I found the stomach of one, obtained in New Brunswick, full of fish. Though generally so shy, it is occasionally very bold, probably from hunger; and Captain Blakiston (*l. c.*) writes that he "knew of an instance of one carrying off a wounded bird from the haversack of a hunter; its wing, having been sticking out and fluttering, attracted the Owl's attention." It feeds on lemmings and other small rodents, Ptarmigan and Willow-grouse, arctic hares, and, as above stated by Audubon, fish, and has been stated to eat carrion; it is very voracious, and destroys numbers of lemming when following them on their migrations.

Mr. Wheelwright, who met with the Snowy Owl in Quickjock, Lapland, writes that "it is clearly a diurnal bird; for any day when we went out on the fells we could see the White Owl perched on a distant rock watching us, or beating over the fells with a stately measured flight—always, however, out of gunshot. Its shriek when on the wing resembles a loud '*krau-au*,' repeated three or four times; but it is seldom heard except when the bird is excited. Some of the movements of this bird are very extraordinary; and I once saw one fall from a considerable height on to the ground, where it lay for some time perfectly motionless, with outstretched wings, as if it were shot. I tried to creep up within gunshot; but it rose out of distance, and sailed away, uttering a wild loud cry, '*Rick, rick, rick*,' as if mocking one."

It is only comparatively lately that full particulars have been recorded respecting the breeding-habits of this species. The Rev. H. S. Hawkins published (Ibis, 1870, p. 298) an excellent account of its nidification in Labrador, where a collector of his took seven eggs out of a nest, consisting of a few feathers placed in a slight hollow on a ledge of rock; and he remarks that all the eggs are not laid at the same time, but the first two are often hatched before the last is laid.

From Mr. Collett, of Christiania, I have the following information respecting the nidification of this Owl in Norway:—"In the summer and autumn of 1872, immense numbers of Lemmings (*Myodes lemmus*) migrated south and north from the Dovrefjeld and its ramifications—also from the fells in Sondre Throndhjems Amt, whence they made their way along the frontier towards Jemtland, in Sweden. In these localities the number of Snowy Owls was observed gradually to increase, becoming in the course of the summer much greater than had been the case even of late years under similar circumstances.

"The phenomena attending the occurrence of this species of Owl in such numbers have not

yet been satisfactorily investigated. No doubt its presence is *partly* owing to a temporary migration to spots where its favourite food is suddenly produced in such abundance. Later in the season the number of individuals is doubled, which, indeed, is not surprising, as procreation in a species as a rule increases simultaneously with the supply of food.

"Now it is a well-known fact that many birds breed more abundantly when food is plentiful than under ordinary circumstances. This, for instance, has been shown to be the case with several species of the owls that prey principally on small rodents, which in certain years are exceptionally numerous; but whether such increase in the procreative powers is owing to the abundant supply of food, or is to be traced *rather* to the cause (whatever it be) which renders the small rodents *in that very year* so much more prolific than common, is still an open question. Neither in Valders nor on the Hallingdal fells was there a migration of lemmings that year; but there, too, the Snowy Owl appeared in large numbers.

"Meanwhile it is a fact that the Snowy Owl does not always lay so many as ten eggs at a time: it did so, however, last year in many cases; and the various circumstances attending the phenomena are not without interest.

"As with all birds of prey, the eggs would appear to be laid not in uninterrupted succession, but with that species at intervals of indefinite duration, during a lengthened period, fructuation taking place previous to the laying of each egg. A natural consequence is, that the young of each brood are widely different in appearance, according to the stage of growth which each has attained. Thus the first of the brood will be almost fledged before the last has broken the shell. And, again, the nestlings, thickly clad with down, necessarily assist in the process of incubation; the old birds have enough to do to provide for the young already hatched, several of which, being more than half-grown, require a good deal of food.

"A nest, located in a hollow on the bare ground, was found by Professor Früs, July 6th, 1872, on the fells in Ringebo, Gudbrandsdalen. The brood were in four stages of growth. Four (of the size of a Hazel-hen) were half-grown, the wings being partially developed; two were considerably smaller; and the remaining three were nestlings just hatched; finally, under the young there was an egg in an advanced stage of incubation. There was evidently an interval of several days between these stages. On the following day a pair of Snowy Owls were observed *in copulâ*; and hence eggs were still being deposited in *their* nest. The male belonging to the first nest was shot, and proved to be a very old bird, perfectly white, with the exception of a few darkish spots on the tips of the wings.

"Many of the nests were found that year on the fells in Gudbrandsdalen; and throughout the summer the 'Kvitorn' (*lit.* White Eagle) was seen in almost every spot. On the shore these birds were seen for hours perching on the telegraph-poles, and were hardly to be driven off with stones.

"In Valders and Hallingdal no less than twenty-nine eggs, taken from nests near Nystuen, on the Fillefjeld, were collected by *one* collector, Mr. Lysne; but as these were not left in the nest, the observations could not, as with those made by Professor Früs, be repeated. Here, too, the eggs were laid at irregular intervals the whole summer through; eggs in an advanced stage of incubation were found on the 1st June (probably their usual breeding-time), and fresh eggs on the 17th June, and even the 19th July.

"When the female is sitting, the male is ever on the watch, and warns his mate at the slightest sign of danger by a loud cry, whereupon she immediately quits her nest, and both birds, screaming incessantly, keep flying for hours together in the immediate neighbourhood of the nest. On such occasions the males are bold to a degree, attacking savagely every one that ventures to approach their nest; they will swoop down on the sportsman or his dog, especially the latter, and can with difficulty be driven away. The females take matters more coolly, posting themselves near the nest in some conspicuous spot, but always out of gun-range. It devolves upon the male bird to go in search of prey, the duty of the female being to divide it when brought to the nest among her young. Hence the former are always in a poor condition, whereas the females are generally plump. Round about the nest are found mice and lemmings, dismembered and entire."

Mr. Lysne, the collector to whom Mr. Collett above refers, was working for Mr. J. A. Harvie Brown, who, in a letter just received, writes to me as follows:—"During the season of 1872, Herr O. T. Lysne collected a number of the eggs of this species in Norway, about latitude 61°. There were great numbers of lemmings (*Lemmus norvegicus*) on the fjelds, which doubtless attracted these birds in unusual numbers. The situations of five nests of eggs procured by him were as follows, quoting from the collector's note-book:—

"'Nest 1. Seven eggs, 17. 6. 72, *O. T. L. ipse.* Nest on a low hill.

"'Nest 2. Four eggs, 1. 6. 72, *L. E.* Nest merely a hollow in ground on top of a low hill.

"'Nest 3. Five eggs, 9. 7. 72, *O. T. L. ipse.* The nest was placed on the top of a low rock, and was merely a hollow in the reindeer-moss.

"'Nest 4. Four eggs, 13. 7. 72, *O. T. L. ipse.* The nest was placed at the side of a hill on a rock.

"'Nest 5. Four eggs, 23. 7. 72, *O. T. L. ipse.* Nest on a hill.'

"Herr Dr. Printz, of Slidre, informed Mr. E. R. Alston and myself when in Norway in 1871, that the nest of this species had only once before been discovered so far south: this was upon the Valdersfjeld."

Of the Snowy Owl I possess only eight eggs in my collection, of which one is from Archangel, two from Luleå, Lapland, obtained through Mr. W. Meves, and five from Nystuen, on the Fille-fjeld, Norway, taken on the 9th of July, 1872. These last are rather dirty, and discoloured with nest-stains. Mr. Lysne, the collector who took them, writes that "the nest was placed on the top of a low rock, and was a mere hollow in the reindeer-moss; both birds were seen, but were very wild: these eggs are the dirtiest I have ever seen." In size the eggs of the Snowy Owl measure from $2\frac{2}{40}$ by $1\frac{25}{40}$ inch to $2\frac{10}{40}$ by $1\frac{31}{40}$, are pure white in colour, and roundish oval in shape, not so round as those of the Eagle Owl; and the grain is much finer than in these latter.

In the foreground of the Plate I have figured an adult male, and in the background a somewhat younger female, and on an extra Plate the nestling, these being the specimens described, all of which are in my collection.

In the preparation of the above article I have examined the following specimens:—

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E Mus. H. E. Dresser.

a, ♂ *ad.* Tarei-nor, Siberia, May 7th (*G. Radde*). *b*, ♂ *ad.* Uleåborg, Finland (*H. E. D.*). *c*, ♀ *ad.* Mortensnæs, Lapland (*Meves*). *d*, ♂, *e*. Archangel (*Piottuch*). *f*, *g*, *h*. Greenland (*Erichsen*). *i*, ♂. Musquash, New Brunswick, November 24th, 1862 (*H. E. D.*). *k*, ♀ *ad.* Calais, Maine, U. S. (*G. A. Boardman*). *l*, *pull.* Davis Straits (*J. A. Harvie Brown*).

E Mus. Harvie Brown and Alston.

a, ♂, *b*. Archangel (*Piottuch*).

Genus SURNIA.

Strix apud Linnæus, Syst. Nat. i. p. 133 (1766).
Surnia, Duméril, Zool. Anal. p. 34 (1806).
Stryx apud Pallas, Zoogr. Rosso-As. i. p. 316 (1811).
Noctua apud Cuvier, Règne Anim. ed. 2, i. p. 344 (1829).
Nycthierax apud Sundevall, Avium disp. Tent. p. 106 (1872).

This genus contains only two very closely allied species, which inhabit the Palæarctic and Nearctic Regions, breeding in the more boreal portions, and ranging southwards during the winter. Both species inhabit the Western Palæarctic Region, one being a constant resident, and the other merely a straggler from the Nearctic Region.

In habits as well as in appearance these Owls remind one much of a Hawk, being strictly diurnal; for they wander about and seize their prey by day alone, and may frequently be seen hawking round during bright sunshine. They are powerful and courageous, frequently striking birds larger than themselves; and though their flight is noiseless, it is strong and swift.

They feed on small mammals and birds, and to some extent also on insects. Their cry is shrill and loud, like that of a Hawk, and it is generally uttered when they are disturbed.

They nest in the hollow of a tree, placing their eggs, which vary in number from three to seven, on the chips and splinters at the bottom of the hole. Their eggs are pure white in colour and rather round in shape, like those of most of their allies.

Surnia ulula, the type of the genus, has the bill short, stout, decurved from the base, the lower mandible notched, nostrils small, round, quite concealed by stiff feathers; cere small; facial disk nearly obsolete; orifice of the ears small, without operculum; head flat, without tufts; wings short, the first quill shorter than the fifth, the second equal to the fourth, the third longest; tail long and graduated; tarsus rather short, the legs and toes densely feathered, claws moderate, curved, acute.



HAWK – OWL
SURNIA ULULA

SURNIA ULULA.

(HAWK OWL.)

Chouette à longue queue de Sibérie, Buff. Pl. Enl. 463 (1770).
Strix ulula, Linn. Syst. Nat. i. p. 133 (1766).
Strix uralensis, Shaw, Gen. Zool. vii. p. 277 (1809, ex Buff., nec Pall.).
Strix nisoria, Meyer, in Meyer & Wolf, Taschenb. deutsch. Vogelk. i. p. 84 (1810).
Stryx doliata, Pall. Zoogr. Rosso-Asiat. i. p. 316 (1811).
Strix funerea, Temm. Man. d'Orn. i. p. 86 (1820, nec Linn.).
Noctua nisoria, Cuv. Règne Anim. ed. 2, i. p. 344 (1829).
Surnia ulula, Gray, Hand-l. of B. i. p. 39 (1869).

Sperbereule, German; *Krakugle*, Danish; *Hægugle*, Norwegian; *Hökuggla*, Swedish; *Girgelodde*, Lapp (*Wheelwright*); *Haukkipöllö*, Finnish; *Sova jastrozebiata*, Polish; *Jastrebinaia sova*, Russian.

Figuræ notabiles.

Buff. Pl. Enl. 463; Naum. Vög. Deutsch. i. pl. 42. fig. 2; Gould, B. of Eur. i. pl. 45; Yarr. Brit. B. i. p. 139; Kjærb. Orn. Dan. Afb. vi. fig. 5; Sundev. Svensk. Fogl. pl. xxv. fig. 5; Fritsch, Vög. Eur. tab. 11. fig. 5.

♂ *ad.* pileo nigricanti-brunneo, ubique maculis ovalibus et fasciis irregularibus albis notato: collo postico magis conspicuè albo fasciato: nuchæ lateribus conspicuè nigris: interscapulio brunneo fasciis celatis albis notato: scapularibus dorso concoloribus, extùs maculis magnis albis ornatis, fasciam verticalem distinctissimam formantibus: dorso imo uropygioque brunneis albo variis, supracaudalibus magis distinctè et latiùs albo fasciatis: tectricibus alarum dorso concoloribus, minimis angustè albo marginatis, majoribus extùs maculis magnis ovalibus ocellatis: remigibus brunneis, extùs et intùs albo maculatis, secundariis dorsalibus angustè et indistinctè albo transfasciatis: rectricibus brunneis, albicanti-brunneo transfasciatis, pennis duabus mediis fasciis albidis irregulariter transnotatis: facie laterali argenteo-albidâ: plumis rictalibus linearibus nigris: regionis auricularis plumis albis versus apicem nigris: lineâ crescente ab oculo postico ductâ et pone regionem auricularem productâ posticè dilatatâ, nigrâ: colli lateribus brunneis, paullulum albo variis: gutture albido, parte medianâ fuscescente: pectore superiore albo, torquem pectoralem latam formante, vix brunneo transfasciato: corpore reliquo subtùs albo, ubique brunneo angustè transfasciato: subalaribus eodem modo coloratis, sed brunneo latiùs et magis irregulariter variis: rostro flavo: plantis pedum flavis, unguibus nigricanti-brunneis: iride lætè flavâ.

♀ vix a mari distinguenda.

Juv. similis adultis, sed pallidior: pileo lanuginoso pallidè brunneo, plumis indistinctè albido marginatis: corpore superiore vix ita distinctè albo vario: caudâ albicanti-brunneâ nec albo transfasciatâ: gutture et facie laterali fulvescenti-albis: pectore obscuriùs brunneo transfasciato.

Adult Male. Head blackish brown, but so thickly covered with white spots as to appear to be really of the latter colour with blackish markings; forehead almost entirely white; on the fore part of the head the white markings take the form of spots, generally rather heart-shaped, and becoming broader towards the nape, until this latter part appears almost entirely white, with narrow shaft-lines and indistinct margins of brown; sides of the nape blackish; the hinder part of the neck, forming a kind of wig, is rather paler brown, irregularly marked with white, which occupies the basal portion of the feather, and then forms another band higher up, gradually narrowing out into a pointed shaft-line towards the apex of the plume; interscapulary region umber-brown, with obsolete pale edgings to the feathers and concealed white spots near the base of the plume; scapulars pale brown, like the back, marked on both webs with large spots of white, the brown part of the feather being reduced to narrow bars and an irregular spot near the apex; lower part of the back pale brown, the rump mottled with white, and the upper tail-coverts rather broadly barred with the latter colour; wing-coverts brown, a little darker than the back, the least ones margined with white, the greater ones marked with a large oval-shaped blotch of white on the outer web, the primary coverts spotted with white and narrowly margined with the same colour towards the apex of the feather; quills pale brown, the shafts slightly rufescent, the primaries spotted with white on both webs, those on the inner web being the largest, the secondaries also marked with white, but the spots on the outer web very much smaller than in the primaries, and rather taking the form of notches; on the inner secondaries the spots are rather larger, taking the form of a complete band across some of the innermost small dorsal quills; tail-feathers pale brown, barred with whitish brown on the outermost ones, the bars becoming purer white towards the centre of the tail, where they are rather conspicuous, though not very broad, all the feathers tipped with white; frontal plumes with thin black shafts; a narrow ring round the eye and a small spot in front of the same black; ear-coverts and cheeks silvery white, with long hair-like black tips, which are not at first seen, as they overlap the black ring of feathers which runs down behind the ear-coverts; no facial disk, but a crescentic line of blackish feathers drawn from the hinder part of the eye and broadening out behind the ear-coverts on to the sides of the neck, the rest of this latter part not occupied by the blackish feathers just mentioned being white varied with brown cross lines; throat whitish, mottled with dusky brown, which becomes less distinct towards the upper part of the breast, so that this part is almost entirely white, with only a few marks and indistinct cross bars; the rest of the under surface of the body whitish, everywhere narrowly barred with dark brown, the bars on the under tail-coverts being somewhat broader; under wing-coverts coloured exactly in the same way, but the bars broader and more zigzag in shape; beak light yellow; claws blackish brown, soles of feet yellow; eye bright yellow. Total length 14 inches, culmen 0·9, wing 8·8, tail 7·0.

Adult Female. Does not differ from the male in any great degree, but is rather darker in plumage, so that the contrast between the brown colour and the white markings is more strongly pronounced. Total length 14·5 inches, culmen 0·9, wing 9·2, tail 7·5.

Young Female. Similar to the adults, but having the feathers of the head more fluffy, pale brown in colour, narrowly tipped with a whitish apical bar; on the back of the wig a few basal markings of white are apparent on disarranging the feathers; in other respects the upper plumage is very similar to the adults', but is more dingy, and none of the white spots on the scapulars or wings are so large or distinct; the bars on the centre tail-feathers are whitish brown, and not pure white; the throat and sides of the face are buffy white; there is no distinct white pectoral band; and the bars on the breast are more tinged with brown; the tarsi are not so thickly feathered. Total length 13·2 inches, culmen 0·8, wing 9·2, tail 7·0.

Obs. The above description is taken from a young female procured by our friend Mr. Meves on the 16th

of July, 1869, at Lake Onega. Messrs. Salvin and Godman have lent us another young bird from their collection, obtained at Kop Vaud, in Norway, on the 6th of June, 1857; and this example, though procured earlier in the year, is really further advanced than the one described by us. In our specimen there are a few feathers coming through on the forehead which are tipped with white; but in the Norwegian bird the whole head is covered with white plumes, as in the adult, a few of the fluffy pale brown feathers of the younger dress still remaining. The bars on the tail are not very distinct, and do not extend right across. On the breast there is a tolerably distinct pectoral band; and the bars on the lower part of the body are broader and more distinct than in the other young bird. In both of them the bill is dull yellow, inclining to horn-blue along the edge of the upper and the base of the lower mandible.

Obs. The European specimens which we have examined all agree very well with one another in the narrow character of the pectoral bars, which are never so broad as in the American species, and have not the same chestnut tinge. Mr. George Gillett has lent us a bird out of his collection, killed by him in Norway on the 1st of October, 1862. This specimen is of a paler brown than the others now before us, has a pure white pectoral gorget, and has the bars of the breast slightly tinged with rufous brown, but decidedly not so chestnut as in the American bird: the narrow character of the cross bars is likewise fully preserved in Mr. Gillett's example. Mr. Gould, in his 'Birds of Great Britain,' seems to have figured a somewhat similar specimen.

The Hawk Owl is a northern species, being spread over the whole of Scandinavia and Siberia. It visits more southern countries only in winter, and then very sparingly, but has not yet been found on the shores of the Mediterranean.

The discovery of the fact that the Hawk Owls of the Old and New Worlds are by no means the same bird rendered it a point of great interest to discover to which species the examples killed in Great Britain belonged; and owing to the kindness of many friends, we have been able to determine the question satisfactorily, with the exception of one single occurrence. This is the Shetland bird mentioned by Mr. Saxby; and it is with considerable regret that we have not been favoured by this gentleman with an account of its capture or a sight of the specimen: while the owners of the other British-killed examples cheerfully acceded to our request to inspect their rarities, Mr. Saxby has not answered the letters which we have addressed to him, and therefore we cannot give our readers any information respecting the Shetland bird. All that we know about it is the record of Mr. Saxby himself in the Huddersfield 'Naturalist' (vol. ii. p. 158), where he writes in his list of the 'Birds of Shetland':—"This rare species has been twice observed. The skin of one of them, which was shot five years ago in the north of Unst, is now in my possession." It seems likely, however, from the locality, that this bird would have proved to be the European species; and could the question have been settled, we should probably find that both the European and American Hawk Owls have been obtained in Great Britain. All the other occurrences refer to the American bird; and a full notice will be found under that heading.

According to Collett it is very widely distributed through Norway, preferring the subalpine region to the low country. On the west coast it is rare, but has been found at Bergen, at Nordfjord, and Sœndmær. On the fells it often extends into the birch region. Messrs. F. and P. Godman, in their paper on the birds observed by them at Bodö during the spring and summer of

1867, write as follows:—"The Hawk Owl appeared to be not uncommon about Kop Vaud. In one day's walk through these forests we came across three different broods of young, some of which we shot. We saw a great quantity of Lemmings in this quarter, which may have been the reason of this Owl being so common that season. We also saw the Hawk Owl, though rarely, in the neighbourhood of Bodö." Sundevall writes that the true home of the present bird is the birch and fir region, and it only occurs in Southern and Central Sweden in autumn and winter. Nilsson observes that it inhabits the subalpine woods in Northern Sweden and Norway. In Herjeådalen, Dalecarlia, Northern Wermland, &c. it is tolerably numerous. It has the same range as the Siberian Jay, namely the upper portion of the conifer region on the fell-sides, and does not extend above the boundary of the forest region, and is there met with in July in families of five or six, of which three or four are young of the year. In the autumn (September and October) and during the winter it ranges far south, and is even met with, though rarely, in the woods and gardens of Skåne. Pastor Wallengren says that a stray pair or two breed in the pine-woods in Northern Skåne. Sommerfelt notices it from the Varanger Fjord; and Messrs. Wheelwright and Wolley both record it as common in Lapland. Von Wright also states that it is plentiful all over Finland. Kjærbölling says that it occasionally visits Denmark in the winter; and our friend Mr. A. Benzon informs us that it occasionally straggles into that country, but he himself has never observed it there.

Meyer records it as rare in Livonia; but in parts of Northern Germany it is stated by Borggreve to be not uncommon in the winter, and is said to have nested in East Prussia. According to Tobias it is not rare in the winter in Oberlausitz, and is occasionally procured in Westphalia, Hanover, and on the Mosel. De Selys-Longchamps mentions the capture of a single bird of this species near Tournay in 1830; and M. Holandre notices three seen together near Metz in the summer of 1834. Krœner, in his list of the birds found in Alsace and the Vosges, says that it appears accidentally in Alsace. One specimen was killed in 1842 in the forest of Brumath by M. Zill, and is now in the Strasbourg Museum, where Mr. J. H. Gurney, jun., tells us he has seen it. It has also been killed near Laxenburg, in Austria. In Poland, according to our friend Dr. L. Taczanowski, "it is rare, only appearing in certain winters, and he has seen examples procured in various parts of the country. Professor Kessler, in his 'Fauna of Kiew,' states that one was procured near that town late in November 1851. According to Professor Bogdanoff it is very common in autumn and winter near Kazan, where it is even met with in the small groves; but it has not been ascertained if it breeds there. In winter it feeds on small birds (*Pyrrhula rubicilla*, *Emberiza citrinella*, &c.) and mice." The Strickland collection contains a specimen from the neighbourhood of St. Petersburg; and our friend Mr. Sabanäeff informs us that it is usually seen in Central Russia during migration, but it breeds in the Government of Jarostaf, near Moscow, and even in the district of Kashir, in the Government of Tula. It breeds exclusively in the birch-forests. Pallas says that it is found plentifully throughout Russia, especially the eastern portion, being particularly abundant near the Ural chain, and thence through the whole of Siberia, even beyond the Lena, wherever there are woods. Dr. L. von Schrenck says it is the commonest Owl in Amoor Land. Middendorff found it nesting in the Stanowoj Mountains; doubtless it winters both there and everywhere else in the Amoor country. About the end of October 1854, when snow had fallen,

I often watched them flying in short bow-shaped flights from tree to tree at the Nikolajefsk post; and they have also settled close to me. It is fond of frequenting the willow bushes in low swampy islands of the Amoor; and in such places I procured it on the 6th of February at the Nikolajefsk post, and M. Maximowicz in December at Kidsi." Dr. von Schrenck further states that specimens in the Petersburg Museum from the Amoor, Kamtschatka, Iakutsk, Wilni, and the neighbourhood of Petersburg agree precisely; and we are informed likewise by Mr. Gurney that the Norwich Museum contains a specimen from the Sea of Ochotsk which is the same as the European bird. Dr. Radde found almost fledged young near the Kulamanda post on the 20th of May 1857.

Our friend Mr. Robert Collett writes to us respecting this Owl in Norway as follows:—"Doubtless this species has one of the most extensive ranges of any of the Strigidæ; but it occurs nowhere abundantly, except when the Lemmings (*Myodes lemmus*) appear during their migrations in unusual numbers. Although its true home appears to be in the conifer woods, especially in the southern part of our country, it occurs during its annual wanderings in autumn and winter in the west, where the conifer trees are almost wanting, and in the low lands of the south. It is more abundant in Finmark than on the Dovre, and wanders all over the subalpine lowlands; on the southern fells it occurs up into the birch region. During the breeding-season it extends southwards to 59° N. lat. In some seasons it may often be observed flying over the open places in the woods hunting after prey, or sitting on the top of a tree straight upright like a Hawk, not caring in the least for the bright sunshine. It is often mobbed by Titmice, Jays, and small birds, which fly shrieking round it; but it appears to take but little notice of them, though it will occasionally dash like a Hawk into the middle of the flock and seize one of the noisy intruders. In the autumn, when it approaches dwelling-houses, it brings consternation amongst the Magpies, who collect round it and mob it, uttering loud cries.

"The eggs are always deposited in a hollow tree, either on the rotten wood or on a scanty bed of dried grass; and the bird commences to sit immediately after depositing the first egg; therefore the young are hatched in succession at short intervals. The breeding-season appears to differ; from what cause I cannot say; and I have found nests on the following dates—viz. on the 24th of May 1866 a nest in a hollow aspen tree containing four tolerably well-grown young, on the 5th of June 1866 a nest containing six young, also half-grown. On the 18th of June 1862 a nest was found in Valders on the top of a broken pine tree (*Pinus sylvestris*) containing two small young and three eggs not yet hatched out. In the same tree, about a couple of yards below the Owl's nest, was the nest of a Golden-eye (*Fuligula clangula*) containing eight eggs; and it is curious that Wolley found a similar instance in Lapland. On the same day (the 18th of June 1862) another nest was found in the same locality containing fully fledged young. That year the Lemmings were found migrating through that part of the country."

Mr. Wheelwright, in his 'Spring and Summer in Lapland,' gives the following account of the present species:—"The Hawk Owl was by far the commonest Owl in this district; and although, of course, like the rest of the tribe, the Lemming forms its principal food when they are 'in season,' I don't believe this bird migrates much, but remains stationary in the same district throughout the year. It is true, however, that in the winter we occasionally kill an old example, both old birds and birds of the year, as far south as Wermland; but I do not think,

except as stray individuals, that they migrate from their native forests. The range of the Hawk Owl in the north is precisely that of the Siberian Jay—the lower fir-forests at the foot and by the sides of the fells; but I fancy that the Siberian Jay breeds further south than the Hawk Owl. You never by any chance, however, meet with them out of the fir-forests.

"The Hawk Owl is by no means shy, and in the breeding-season it is one of the boldest of all birds. Seated on the top of a dead pine, close to the nest where his mate is sitting, the old male bird keeps a constant watch; and as soon as any one appears to be approaching the nest, he raises his tail and head, after the manner of the Cuckoo, and uttering a shrill cry, not unlike that of the Kestrel Hawk, down he comes full on the head of the intruder; dashing by with the speed of lightning, he returns to the charge again and again, till he has either cleared the coast or has paid the penalty of his rashness with his life. My lad was really frightened at this bird, and always hated to go up to a nest: and well he might; for on one occasion when taking the eggs out of a dead pine, without a branch to help him, holding on, as the sailors say, 'by his eyelids,' forty feet from the ground, the old bird made a swoop down on his head, struck off his cap (through the top of which a large slit was cut), and in a moment returned to the charge, tearing off a very fair-sized claw-full of his hair. I was standing below and knocked the old bird over; and had I not been at the bottom of the tree with my gun the lad might easily have been beaten off his hazardous perch. There is no trouble in shooting the Hawk Owl if you have only a dog in the forest; for, whatever time of year it may be, as soon as ever the bird spies a dog below him, it always descends to give battle.

"In flight, manners, and appearance the Hawk Owl is closely allied to the Hawks. It is strictly diurnal in its habits, and to the stealthy quiet flight of the Owl adds the spirit and courage of the Falcon. Hardly a forest bird is safe from the attacks of these Owls. I have seen them strike down the Siberian Jay, their closest neighbour, on the wing; and more than once have I disturbed them feeding on the old Willow-Grouse, a bird half as large again as themselves. Their principal food appears to be birds, lemmings, and woodmice; but I have often taken insects out of their stomachs. There is little difference in the plumage of the male and female; but the latter is rather the larger; and in the breeding-season I have observed that the breast and belly of the female are strongly tinged with reddish brown. The male takes his turn at sitting (as is the case with the Woodpecker); for I have shot both as they flew out of the hole from the eggs. The Hawk Owl moults very early, as do many of the northern birds. Like the Siberian Jay, the old birds may be seen in deep moult, without tails, even before the young are flyers; and in both the autumnal moult is complete as soon as the young birds are full-feathered. The Hawk Owl is then in its best plumage, and its clean, pure, shiny dress at that season is very different from the dingy colouring of spring.

"The nest is always in a hole in a rotten pine or fir, sometimes at a considerable height from the ground. Morris says the eggs are white (here he is right); but he also says the 'nest is *built* in a tree, and composed of sticks, grass, and feathers; the eggs, like those of the Owls generally, of the dual number.' Now I know of no European Owl which, as a rule, lays so few as two eggs. The Eagle Owl, in every instance that I have seen, lays three; and though I never myself took the nest of the Lap Owl (for although it is shot occasionally there, it does not appear to breed in the Quickjock forests), through the kindness of Mr. A. Newton I possess a genuine

specimen of this egg, which was taken from a nest with *seven* eggs near Muniovara in 1861. This egg is rather rounder and not so elongated as that of the Snowy Owl. Of the breeding-habits of the Ural Owl (*Strix uralensis*, Pall.) we know nothing for certain; but of *all* the other European Owls I believe five or six to be the full number. On June 13th I took a clutch of the Hawk Owl with eight eggs, probably a second clutch from a bird whose first nest had been robbed; for we seldom found fresh eggs after the second week in May, and early in June we shot young flyers. I also took on May 30th a clutch of Tengmalm's Owl with ten eggs. But these certainly were exceptional cases. As to the nest, I never saw a *nest* of either, the eggs having been always laid, like those of the Woodpecker, in a hole, with nothing under them but a few dry splinters and chips of the rotten or fresh wood, as the case might be.

"The eggs of the Hawk Owl very often so much resemble those of the Short-eared Owl that one might well pass for the other; but they are in general a little smaller, more elongated, and pointed at the smaller end, of a deep dirty white. Usual size $1\frac{1}{2}$ inch by $1\frac{1}{8}$."

In Professor Newton's edition of Yarrell's 'British Birds' is published an interesting note:—"The late Mr. Wolley, in a letter to the Editor (part of which was printed in the 'Zoologist' for 1854) says that this bird, which in some years is extremely abundant in Lapland, 'flies much in the daytime, and, with its long tail, short, sharp wings, and quick flight, has a very Hawk-like appearance in the air, when its large square head is not seen. Its cry near its nest is also similar to a Hawk's; and it often sits on the bare top of an old dead fir, and has not the least fear of a gun. It carries itself much after the fashion of the more regular Owls; but whilst all the feathers at the back give a great breadth to its full face, there is quite a table at the top of its head. It casts its bright yellow eyes downwards with the true air of half-puzzled wisdom, or turns its head round for a leisurely gaze in another direction: to glance backwards is out of the question; and to look at any one with a single eye is much beneath its dignity. From my window I have seen it fly down from its stand and take the mouse it caught back to the tree before it began to eat it; but it shifted its place several times before it found a convenient spot for finishing the meal. I do not know whether it is in the habit of also hunting on the wing; but this year mice are so abundant that such exertion would be superfluous. When disabled from flight, it at once squares itself for defence, putting on its most formidable countenance, guarding its back and presenting its front to the enemy. Calmly and silently it maintains its ground, or springs from a short distance on its foe. So bravely it dies, without a thought of glory and without a chance of fame; for of its kind there are no cowards.' Subsequently the same excellent observer had numerous opportunities of becoming acquainted with the Hawk Owl's mode of breeding, and found that early in the year it occupies a hole in a tree, or one of the nest-boxes set up by the people for the accommodation of Ducks, in which the hen bird lays from five to eight white eggs, measuring from 1·63 to 1·43 by 1·26 to 1·13 inch. The nest is boldly defended by its owners, and especially by the cock, who, during incubation, will fiercely attack and with his talons seriously wound any invader, often losing his life thereby." In the 'Ootheca Wolleyana' Professor Newton also gives a note of Mr. Wolley's, illustrating the manner in which this courageous bird defends its nest:—"6th May, Niemi's Johan brought six *Pissi's* eggs, taken in Ollasrowa, 27th April, with both birds. He said that when he went to the nest the cock came and struck two holes in his ear; but, as he had got a stick in his hand, he

struck it on the head, so that it died straightway; and the hen he got fast in the hole when she came out from the nest. Ludwig relates that the birds made quite a serious attack on Johan. They are both skinned, and I have sent them to England."

In Dresser's collection are six eggs of this Owl, obtained in Lapland by Wheelwright and Mr. Wolley's collectors. In colour they are pure white, rather more glossy than the eggs of our Common Barn-Owl, and measure from $1\frac{21}{40}$ by $1\frac{9}{40}$ of an inch to $1\frac{24}{40}$ by $1\frac{9}{40}$.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Norway (*R. Collett*). *b, c,* ♂, ♀. Stockholm, October 14th and November 6th, 1870. *c,* ♀ *jun.* L. Onega, July 16th, 1869. *d.* St. Petersburg (*Dode*).

E Mus. Salvin and Godman.

a, b. Kop Vaud, Norway, June 6th and July 7th, 1871 (*F. & P. Godman*).

E Mus. J. H. Gurney, jun.

a, ♂. Smithfield Market, March 9th, 1871 (*J. H. G.*).

E Mus. G. Gillett.

a, ♀. Norway, October 1st, 1862 (*G. G.*).



AMERICAN HAWK-OWL

SURNIA FUNEREA

120

SURNIA FUNEREA.

(AMERICAN HAWK OWL.)

The Little Hawk Owl, Edwards, Nat. Hist. Birds, ii. pl. 62 (1747).
Caparacoch, Buff. Hist. Nat. Ois. i. p. 306 (1770, ex Edw.).
Strix canadensis, Briss. Orn. i. p. 518, pl. xxxvii. fig. 2 (1760).
Strix freti hudsonis, id. op. cit. p. 520 (1760, ex Edw.).
Strix funerea, Linn. Syst. Nat. i. p. 133 (1766, ex Briss.).
Strix caparoch, P. L. S. Müll. Syst. Nat. Suppl. i. p. 69 (1776).
Strix hudsonia, Gm. Syst. Nat. i. p. 295 (1788).
Surnia funerea, Duméril, Zool. Analyt. p. 34 (1806).
Surnia canadensis, Steph. Gen. Zool. xiii. p. 62 (1825).
Surnia borealis, Less. Traité d'Orn. i. p. 100 (1831).
Syrnia funerea, Macgill. Hist. Brit. B. iii. p. 404 (1840).
Noctua funerea, Yarr. Hist. Brit. B. i. p. 139 (1843).

Figuræ notabiles.

Audubon, B. of N. America, folio, pl. 378, et op. cit. 8vo, i. pl. 27; Dekay, Zool. N. S. Birds, pl. 9. fig. 19.

Ad. similis *S. ululæ* sed saturatior, et fasciis pectoralibus latis rufescentibus semper distinguendus.

Adult Male. Above glossy dark brown, inclining to purplish black on the nape and hinder neck; crown of the head thickly covered with white spots or bars, mostly rounded or oval, but becoming elongated on the hinder part of the head; a rather distinct white eyebrow; sides of the face, exhibiting no distinct facial disk, silvery white, a few of the loral bristles black; the ear-coverts and hinder cheek-feathers blackish at their tips, thus forming a distinct longitudinal patch down the sides of the neck; hinder part of the neck, or wig, brown varied with oval or lanceolate spots of white; interscapulary region brown, unspotted; scapulars also brown, the outer webs marked with large and conspicuous white oval spots; lower part of the back reddish brown, varied with bars and spots of white; wing-coverts brown, like the back, the least ones obsoletely margined with whitish, the greater ones scantily marked with large oval spots of white; quills dark brown, the secondaries rather paler, spotted and barred with white on both webs, the spots becoming fewer on the outermost primaries, where they occasionally form only blotches of white on the external web, or are altogether absent; tail-feathers paler brown, tipped with whitish, and crossed with narrow and irregular bars of brownish white, gradually becoming bars of paler brown towards the external feathers, which, however, are rather broadly banded with white towards their base; under surface of the body whitish as far as the breast, with a large patch of purplish brown on the throat and sides of the breast, leaving a patch of white on the lower throat; upper part of the breast whitish, crossed by more or less distinct bars of brownish, so that the pectoral gorget becomes much obscured; rest of the under surface of the body crossed by broad alternate bars of white and chestnut-brown, the latter being particularly broad on the flanks; legs fulvous, mottled

with chestnut-brown; bill yellow, inclining to horn-blue on the gape and lower mandible; feet and iris as in the European bird.. Total length 15 inches, culmen 1·0, wing 9·0, tail 8·0, tarsus 1·2.

Obs. Although the differences between the American and European Hawk Owls have not been considered sufficient to warrant their specific separation by most ornithologists, we do not ourselves doubt for one moment that they are perfectly distinct. We have examined many specimens of each, and have always found the characters constant, so that we have never experienced any difficulty in distinguishing the two birds at a glance. The European Hawk Owl is always paler, and has a purer white gorget, while the American species has a much darker back, and can always be recognized by the broad chestnut bars on the breast and abdomen.

This species claims a place in the European avifauna on the strength of its occurrence in Great Britain, where the true Hawk Owl of Europe has not yet been proved to occur. Yarrell's woodcut apparently represents the Scandinavian species; but the specimens mentioned in the more complete edition of Professor Newton certainly belong to the American bird, as will be seen by the following notes. We quote from Professor Newton's work as follows:—"An Owl of this species, subsequently presented by Dr. Burkitt to the Museum of Trinity College, Dublin, was taken, in an exhausted state, on board a collier, a few miles off the coast of Cornwall, in March 1830. On the arrival of the vessel at Waterford, whither she was bound, the bird was given to a friend of Dr. Burkitt, with whom it lived a few weeks, and then came into his possession. Such was the account given by the late Mr. William Thompson when exhibiting the specimen at a meeting of the Zoological Society in 1835, and published in its 'Proceedings' for that year (p. 77)." Being anxious to see this specimen, we wrote to our friend Mr. A. G. More, at Dublin; and we desire to return our best thanks to him for transmitting the bird to us, and to the authorities of the Trinity-College Museum for allowing the rarity to be sent across the sea for our inspection: it turned out to be an American Hawk Owl. Professor Newton continues:—"Four other examples have since occurred. On a sunny afternoon, in August 1847, as recorded by Mr. E. T. Higgins (Zool. p. 3029), a bird of this species was shot near Yatton, in Somersetshire, while hawking for prey; and the specimen is now in Mr. Borrer's collection." The latter gentleman was so kind as to bring his bird up to London in order that we might see it; and, as in the former case, it proved to be the American species. "Mr. Saxby has forwarded the information that one was killed at Scaa, in Unst, in the winter of 1860–61, and that its skin came into his possession." Concerning this bird we have failed to obtain any additional details from the owner; but we strongly suspect that it must have been the European Hawk Owl which occurred in Shetland. "Mr. Robert Gray states that in December 1863 he examined a very fine specimen which was shot at Maryhill, near Glasgow, and exhibited at a meeting of the Natural-History Society of that city by Dr. Dewar, in whose collection it now is. Mr. Gray adds that another example was taken in the flesh to a bird-stuffer at Greenock, in November 1868, which was procured by Mr. William Boyd, and is supposed to have been killed at no great distance from that town." Dr. Dewar, in reply to our letter, most kindly sent up his specimen to London; and it was recognizable at a glance as the American bird. Mr. Robert Gray, who has done his very utmost to help us in identifying the Scotch examples, has written us a letter respecting the other bird mentioned:—"Mr. Boyd has civilly acknowledged my application, but expressed his very great regret that he cannot now trace the Greenock bird. He had merely

borrowed it from the person who skinned and stuffed the specimen, for the purpose of sending it to me for exhibition at a meeting of this Society. The owner afterwards called and took the bird away in the absence of the individual referred to; and the boy in charge of the place forgot to inquire the name and address. Mr. Boyd, however, has still some hope of being able to find him out. He tells me that *another* specimen of the Hawk Owl was taken in the flesh to the same shop a few months ago, and that he saw and examined it. It was in very poor condition; and as it had been left by a sailor, it was concluded that he had caught it on board some ship." It will be seen, therefore, that, owing to the kindness of our friends, we have been able to establish the claims of the American Hawk Owl to a place in the British list; and if the Shetland bird should prove to be the European *Surnia ulula*, the most westerly range of the one and the most easterly range of the other will be found to occur in Great Britain.

The present species is found over the greater part of North America, and is apparently by no means rare; for it is to be seen in most collections from Canada and Labrador. Messrs. Swainson and Richardson, in the 'Fauna Boreali-Americana,' give the following account of the species:—"It remains all the winter in high northern latitudes, and is rarely seen so far south as Pennsylvania, and then only in severe winters. Wilson saw only two specimens in the United States. It is a common species throughout the fur-countries, from Hudson's Bay to the Pacific, and is more frequently killed than any other by the hunters, which may be partly attributed to its boldness and its habit of flying about by day. In the summer season it feeds principally on mice and insects; but in the snow-clad regions, which it frequents in the winter, neither of these are to be procured, and it then preys mostly on Ptarmigan. It is a constant attendant on the flocks of Ptarmigan in their spring migrations to the northward. It builds its nest on a tree, of sticks, and grass, and feathers, and lays two white eggs. When the hunters are shooting Grouse this bird is occasionally attracted by the report of the gun, and is often bold enough, on a bird being killed, to pounce down upon it, though it may be unable from its size to carry it off. It is also known to hover round the fires made by the natives at night." Captain Blakiston also, when collecting in North America, procured this species at the Forks of the Saskatchewan on the 7th of November, 1857, and again on the 29th of January, 1858." In a later paper he writes concerning it:—"The Hawk Owl is the most common Owl of the interior, up to the Arctic coast; it is resident all the winter through on the Saskatchewan, and extends thence to Hudson's Bay. I have not heard that it has been met with by any ornithologist to the west of the Rocky Mountains."

For the following interesting letter on the distribution of the American Hawk Owl we are indebted to our kind friend and illustrious fellow-labourer, Dr. Elliott Coues, whose contributions to the present work will be welcomed not by ourselves alone but by every other ornithologist:—

"My Dear Sirs,—That I have not sooner complied with your request, is not from any indisposition to contribute, be it never so little, to your great work, the progress of which I watch with lively interest, and in confident anticipation of its successful completion. It is said that one who cannot 'find time,' must 'make time;' and this I do in the hope that what I have now the pleasure of placing at your service respecting the distribution of the Hawk Owl in America may reach you in due season. I have never seen the bird alive, and therefore can say nothing of its habits from personal observation; but I am satisfied that the statements which follow are authentic and reliable.

"This bird is one of the comparatively few species of circumpolar distribution, American and European representatives of which have not been lately held as distinct. True, it is afflicted with synonymy—as what bird known to the last century is not? but its names have generally, it would appear, been given rather in ignorance, or in misconception of its original designation, than with the design of indicating a bird different from *Strix ulula*. Wilson used a name of Gmelin's (*hudsonica*) which came nearly home to him; and the name *funerea*, for many years current among American writers, obtained simply through wrong identification of Linnæus's description (Fn. Suec. 22), which, you need not be told, has been often said to apply to the bird afterwards called *Strix tengmalmi* by Gmelin.

"I have handled specimens of the Hawk Owl from so many localities in British America, and our accounts of the bird in that portion of North America are so unanimous, that it may fairly be said to inhabit the whole of that country, and to reside permanently wherever it can find food the year around. We have no evidence of any regular periodical migration, independent of necessity; but there is no doubt of its being forced in winter by scarcity of food, if not by cold, to retire, either wholly or in part, from regions where it finds ample sustenance and where it breeds in summer. It is almost entirely due to this forced movement that the bird occurs in the United States at all—the only known exception being its presence in Northern New England in summer, as we shall see further on. I have been at some pains to gather the United-States quotations of the species, and believe that I have them very nearly all; so that its southward extension can be pretty exactly determined.

"In 1840 Dr. Brewer (12mo ed. Wilson, 686) gave the habitat of the species as 'to the north of 35°.' You will be able to judge how nearly this hits the bird in Europe; for this country I should not like to set a *probable* limit much if any further south, but, so far as I am actually informed, must place the southern boundary at about 40° N. Latitude so low as this even, however, is only exceptionally reached, and never, so far as known, except in winter. It is singular that one of the very earliest American notices of the species should mention a specimen from this extreme of its distribution, the original of Wilson's drawing (pl. 50. fig. 6) and description (vi. p. 64) having been 'shot in the neighbourhood of Philadelphia' (about 40°). Mr. Cassin quotes it (B. of Cal. & Tex. 191) from New Jersey, on Mr. Harris's authority. Mr. Lawrence catalogues it (Ann. Lyc. Nat. Hist. viii. 281) as 'rare' near New York City. Dr. De Kay includes it in the fauna of that State (Nat. Hist. N. Y. pl. ix. fig. 19). We learn of its occurrence in Ohio through Mr. J. M. Wheaton, who includes it in his catalogue (Ohio Agric. Rep. 1860, no. 29), but without remark, and most likely upon the excellent authority of Professor J. P. Kirtland, who accredited it to the northern portion of the State in his Catalogue of 1838 (Second Ann. Rep. of the Geol. Surv. of Ohio). For its appearance in Wisconsin we have the equally reliable authority of Dr. P. R. Hoy (Trans. Wisc. Agric. Soc. 1852; Proc. Acad. Nat. Sci. Philad. 1853). Further westward, in the United States, we regret to say, the records are silent, or at least have not brought the bird to my notice, after a pretty diligent search through the library shelves. None of the many naturalists attached to the government explorations in the west appears to have met with the Hawk Owl; for it is not mentioned in any of their several reports; while the specimens cited in the great ornithological résumé of their labours (Baird, Cassin, and Lawrence, B. of Am. 1858, p. 64) are all from British America. It is particularly surprising that neither Dr. Cooper nor Dr. Suckley found it in Washington or Oregon Territory; for we cannot doubt that in the west the bird comes down to the latitudes it reaches along the Atlantic and in the interior States. Dr. Cooper does, indeed, present it in his late work (Orn. of California, *curante* Baird, i. 448) with an excellent woodcut, but also with the remark that it 'has not yet been found within the limits of California, but will doubtless be met with sooner or later.' This surmise is perfectly pertinent. I have myself no doubt that the bird will be found wandering southward, particularly along the mountains in winter, even to the confines of Arizona and New Mexico—that is, somewhere between the latitudes just now discussed with Dr. Brewer.

"Turning back now, we will enter New England, the diligence of whose ornithological sons cannot have failed to set down for us something interesting. Waiving the modesty that I ought to show, after this remark,

in refraining from the citation of my own article, I may say here that I see no reason to materially modify my paragraph (Proc. Essex Inst. v. 1868, p. 261):—'Winter resident. Of regular and rather common occurrence in Maine, but in more southern localities rare, and perhaps only accidental. It extends, however, throughout New England.' Mr. J. A. Allen, deservedly held as our best authority on Massachusetts birds, never saw it at Springfield, and as to its occurrence in the State is only able to remark (Proc. Essex Inst. iv. 1864, p. 81):—'The Hawk Owl is said by Professor Emmons [Geol. Rep. Mass. 1833] to have been seen in autumn. Though I have found no notice of its capture, it is not improbable that it may occasionally occur along the Green Mountains in the western part of the State.' But a little later, however, in his interesting 'Notes on some of the Rare Birds of Massachusetts' (Ann. Lyc. Nat. Hist. iii. 1869, p. 569), he is more explicit. 'Mr. A. L. Babcock,' he says, 'has a specimen which he took a few years since at Natick. Dr. Brewer informs me that he once obtained it near Roxbury. Mr. Scott writes that five specimens were taken at Westfield in the autumn of 1867;' and adds that from his later information he believes it to be a 'somewhat regular winter visitor' in the Green-Mountain region above mentioned. Mr. E. A. Samuels (Rep. Agric. Mass. 1863, App.) catalogues it as 'very rare in winter' in Massachusetts. For its occurrence in Vermont we have the authority of Professor Z. Thompson (Hist. of Vermont, &c. 1842, p. —); but Audubon's statement (Orn. Biog. 1835, iv. 350) that it is 'very common' about Memphremagog Lake, in that State, made on the authority of Dr. Brewer, is expressly contradicted by the latter (N. Am. Oölogy, i. p. 80), who says that the information he gave Audubon proved incorrect, and that the 'Hawk Owl is probably a rare species throughout Vermont.' New Hampshire is silent on the Owl question, as, indeed, it is on almost every other ornithological topic, being (as I am ashamed to say of my native State) one of the few States whose birds have never been separately catalogued. I shall only add one more to my list of references before coming to notice the *breeding* of the bird in the United States; and this is the statement of Mr. T. McIlwraith (Proc. Essex Inst. 1866, p. 82) that the bird is a 'rare winter visitant' at Hamilton, Canada West—a locality south of the only region in the United States left for us to consider in the present connexion.

"For all the foregoing citations, please observe, refer to the bird in autumn or winter only, and as astray from its native pineries. But a part of New England lies a little north of the general boundary of the rest of the United States; and it would almost seem as if this political line were really the limit of the Hawk Owl's summer residence. In the forests of Maine, then, we have authentic advices of its breeding. Mr. G. A. Boardman, a close and accurate observer, says (Proc. Boston Soc. Nat. Hist. ix. 1862, p. 123) of the bird in the vicinity of Calais, Maine:—'Resident. Not very plenty. *Breeds.*' This is the sole reference to the breeding of the bird in the United States that I know of, except Mr. Samuels's (Orn. & Oöl. of N. Eng. 1867, p. 80), which, however, simply rests upon the same discovery of its nest and eggs by Mr. Boardman. And, moreover, the bird does not appear to breed throughout Maine, even if it regularly does so in some sections; for Professor A. E. Verrill, writing of the Hawk Owl as observed at Norway, Oxford Co., Maine, says (Proc. Essex, Inst. iii. p. 143), 'Autumn and winter common. I have never seen it in summer.' And even to the northward, as at Quebec, for instance, Mr. Wm. Couper (*apud* Samuels, *op. cit.* p. 81), remarking upon its abundance in winter, merely refers to its breeding in the northern portions of Hudson's Bay and Labrador.

"Until very recently, American eggs of the Hawk Owl and the bird's mode of nesting were unknown to us; even in 1853 Dr. Brewer was unable to describe or figure the eggs in his admirable work; and the stock in trade of American writers in this matter was for many years simply 'eggs two, white,' an evident draft on Richardson (F. B.-A. ii. 1832, p. 92). Samuels (*l. c.*) describes two eggs from Labrador, and says that the bird 'usually builds in a hollow tree, but sometimes constructs a habitation in the crotch of a tall tree of sticks, grass, and feathers.'

"Do I grow tiresome? or will you have one more extract, which I add because I think it one of the best we have, and because it will stop that 'eggs two' for the future! It is from the remarkably interesting and important 'List of the Birds of Alaska, with Biographical Notes,' recently published in the Transactions

of the Chicago Academy of Science (i. p. 267) by Messrs. Dall and Bannister, two of the corps of enterprising young naturalists who, under the leadership of the lamented Kennicott, and in his enthusiastic spirit, explored our newly acquired north-west territory with such signal success.

"'This is the commonest species of Owl about Anlato,' writes Mr. Dall. 'Many of both sexes were obtained. April 16th, 1867, took from the ovary of a female an egg ready for laying. I invariably found many tape-worms in the intestines of the bird; afterwards I discovered in the *mouse*, which is the usual food of these Owls, the hydatid from which these parasites were developed. May 5th, 1868, *obtained six eggs of this species.* They were laid in the top of an old birch stump, 15 feet high. The rotten wood was somewhat hollowed out; and the eggs lay directly on it. The male attacked me while climbing the stump, and knocked off my cap. He had been sitting on the nest. I did not see the female. . . . . I seldom saw any thing but mice in the crop of this bird, which, toward dusk, is very fond of flying from tip to tip of the tall spruce-pineries, and apparently swinging or balancing itself, and calling to its mate at intervals while chasing or being chased by him.'

"Renewing the assurances of my great interest in your work, I beg leave to subscribe myself

"Yours very truly,

"Elliott Coues."

"Baltimore, Md., U.S., October 10th, 1871."

The above account of Dr. Coues's is so complete, that we can ourselves add nothing to it, except as regards the Bermudas, where Captain Drummond is stated in the 'Contributions to Ornithology' for 1850 (p. 37) to have seen a bird of this species on the wing within a few yards of him.

The present species is a true day Owl, and may often be seen hawking after prey in the strongest sunshine, or seated quietly blinking on the top of an old scathed tree, apparently undisturbed by the glare of the sun. In its general appearance, and especially in its flight, it bears considerable affinity to the Sparrow-Hawk; and thus the current idea amongst some of the northern peasants that it is a cross between an Owl and a Hawk does not, after all, appear so absurd. Dresser had ample opportunities of observing it in New Brunswick, where he found it by no means uncommon. In that country it affects the open plains, or so-called blueberry barrens, where the open country is covered with cranberry- and blueberry-bushes; and an occasional scathed tree still remains lifting its bare branches towards the heavens. It will sit on one of these trees for hours, in an upright Hawk-like position, occasionally hunting over the ground like a Kestrel in search of the small fieldmice which form its chief food. It shows but little fear, and may easily be approached within gunshot; sometimes, indeed, when fired at and missed, it will take a short flight and return to its former perch. On one occasion Dresser fired at one with a rifle and cut the branch in two close under the bird, which returned almost immediately to another branch on the same old scathed tree, and was a second time missed, the distance being great, and finally fell to the third shot. The note is a shrill cry, not much unlike the call of our common Kestrel, and is generally uttered on the wing. Its food appears to consist almost exclusively of small fieldmice; and out of numbers whose stomachs Dresser examined, all contained remains of these, sometimes, though very seldom, with remains of small passerine birds. Naumann states that the European bird also feeds on large coleoptera and grasshoppers. They appear to hunt after food chiefly early in the forenoon and in the evening, and during the day rest on some elevated perch, occasionally taking flights about

or picking up a stray mouse. During the night they retire to rest like others of the diurnal Raptores.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. York Factory, Hudson's Bay (*Whitely*). *b*. Canada (*Burton*).

E Mus. H. E. Dresser.

a, *b*, ♂, ♀. Musquash, St. John, New Brunswick, August 1859 (*H. E. D.*)

E Mus. Salvin and Godman.

a. Canada (*Osburn*). *b*. Arctic America (*Kennicott*).

E Mus. Hanbury Barclay.

a. Canada.

Genus NYCTALA.

Strix apud Gmelin, Syst. Nat. i. p. 291 (1788).
Athene apud Boie, Isis, 1822, p. 550.
Nyctala, C. L. Brehm, Isis, 1828, p. 1271.
Ægolius apud Kaup, Natürl. Syst. p. 34 (1829).
Noctua apud Cuvier, Règne Anim. i. p. 345 (1829).
Syrnium apud Eyton, Hist. Rar. Brit. B. p. 90 (1836).
Scotophilus apud Swainson, Classif. of B. ii. p. 217 (1837).
Ulula apud Schlegel, Mus. Pays-Bas, Striges, p. 8 (1862).

This genus contains two species, *Nyctala tengmalmi*, which inhabits the northern portions of the Palæarctic and Nearctic Regions, and *Nyctala acadica* (Gmel.), which inhabits the Nearctic Region, but ranges also into the northern portion of the Neotropical Region. These birds are nocturnal in their habits, hiding by day and coming out only at the approach of night to hunt after their food. Their flight is soft and noiseless, though tolerably rapid. They feed on small birds, small mammals, and even on insects, obtaining their food only at night. Their cry is a single melancholy note, uttered at night at short intervals. They nest in hollow trees, without making any regular nest, and deposit several pure white roundish eggs.

Nyctala tengmalmi, the type of the genus, has the beak short, stout, decurved from the base, under mandible notched; cere rudimentary; nostrils small, round, concealed by stiff feathers; ears large, asymmetrical, furnished in front with a well-developed operculum; facial disk large, nearly complete; head large, the asymmetry of the aural region extending to the skull; wings long, broad, the first quill shorter than the seventh, the second shorter than the fourth, the third longest; tail short, nearly even; legs and toes densely feathered, claws rather slender, curved, acute.



TENGMALM'S OWL. ad. et juv.

NYCTALA TENGMALMI

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NYCTALA TENGMALMI.

(TENGMALM'S OWL.)

Strix tengmalmi, Gm. Syst. Nat. i. p. 291 (1788).
Strix albifrons, Shaw & Nodder, Nat. Misc. v. pl. 171 (1794).
Strix dasypus, Bechst. Naturg. Deutschl. ii. p. 972 (1805).
Athene tengmalmi, Boie, Isis, 1822, p. 550.
Nyctala pinetorum, Brehm, Isis, 1828, p. 1271.
Nyctala abietum, Brehm, Isis, 1828, p. 1271.
Nyctala planiceps, Brehm, Isis, 1828, p. 1271.
Noctua tengmalmi, Cuv. Règne Anim. i. p. 345 (1829).
Ægolius tengmalmi, Kaup, Natürl. Syst. p. 34 (1829).
Syrnium tengmalmi, Eyton, Hist. Rarer Brit. B. p. 90 (1836).
Nyctale tengmalmi, Bonap. Comp. List B. Eur. & N. Am. p. 7 (1838).
Nyctale richardsoni, Bonap. Comp. List B. Eur. & N. Am. p. 7 (1838).
Strix frontalis, Lichtenstein, Abhandl. Acad. Berlin, p. 430 (1838).
Nyctale funerea, Bonap. Cat. Metod. Ucc. Europ. p. 24 (1842).
Nyctale pinetorum, Brehm, Vög. Deutschl. p. 112 (1831).
Nyctale abietum, Brehm, Vög. Deutschl. p. 113, t. viii. fig. 3 (1831).
Nyctale planiceps, Brehm, Vög. Deutschl. p. 113 (1831).
Nyctale kirtlandi, Hoy, Pr. Phil. Acad. 1852, p. 210.
Nyctale minor, Brehm, Naumannia, 1855, p. 270.
Nyctale baedekeri, Brehm, Naumannia, 1855, p. 270.
Nyctale albifrons, Cass. B. of Calif. & Texas, p. 187 (1856).
Ulula funerea, Schl. Mus. Pays-Bas, *Striges*, p. 8 (1862).

Chouette Tengmalm, French; *Rauhfusskauz*, German; *Lilla Skovugle*, Danish; *Perleugle*, Norwegian; *Perluggla*, Swedish; *Helmipöllo*, Finnish; *Sytsch rutschnoi*, Russian; *Sowapójdzka*, Polish.

Figuræ notabiles.

Naum. Vög. Deutschl. i. taf. 48. figs. 2, 3; Gould, B. of Eur. i. pl. 49; Yarr. Hist. Brit. B. i. p. 146; Kjærb. Orn. Dan. Afb. vi. fig. 3; Sundev. Sv. Fogl. xxv. fig. 3; Fritsch, Vög. Eur. tab. 11. fig. 1, tab. 13. fig. 8.

♂ *ad.* suprà brunneus, ubique maculis celatis albis notatus, quasi ocellatus, colli postici maculis rotundatis magis conspicuis: tectricibus alarum brunneis dorso concoloribus extùs maculis oblongis albis ocellatis: remigibus brunneis, extùs albo maculatis, primariis intùs maculatis sed secundariis albo semifasciatis: rectricibus brunneis, albo maculatis, fasciis pogonii interni majoribus: fronte et pilei antici maculis albis minoribus et plurioribus: supercilio et regione oculari albis, plumulis loralibus et rictalibus nigricantibus versùs apicem albicantibus: plumis auricularibus brunneis, argenteo-cinerascente lavatis:

annulo plumarum postauriculari lato saturatè brunneo maculis parvis albis ocellato: collo laterali et corpore subtùs toto albis, pectore superiore et laterali brunneo irregulariter notatis, abdomine et subcaudalibus cum tibiis puriùs albis sparsiùs notatis: rostro sordidè flavo: iride lætè flavâ.

Juv. ubique fuliginoso-brunneus, dorsi plumis lanugine albidâ terminatis: remigibus et caudâ maculis albis parvis transnotatis: facie anticâ albicante: subtùs pallidior, abdomine et hypochondriis fulvescentibus, tibiis aureo fulvis.

Adult Male (Norrland, Sweden, February 1871). Entire upper parts dull umber-brown, thickly spotted on the head with drops of dirty white; nape marked with larger, more scattered, and irregular spots; back, scapulars, and wing-coverts spotted with drops like those on the head, but larger, whiter, and more scattered; tail the same colour as the back, each feather having four spots of white on each web, which form four bars on the tail when spread; primaries the same as the back, but the markings on the inner web are much larger; bill covered with bristly black feathers; a white ring round the eye; facial disk greyish white, many of the feathers being tipped with black; a ring round the disk and the fore part of the head dark umber, closely covered with small distinctly defined white spots; breast and underparts white, mottled with reddish brown, the centre of the breast and abdomen being almost pure white; under tail-coverts white, slightly marked with rufous streaks; bill dirty yellow; legs thickly covered with whitish feathers, marked with pale brown; iris bright yellow. Total length 9·40 inches, culmen 0·70, wing 6·70, tail 4·40, tarsus 0·75.

Adult Female (Bosjö Kloster, 27th of March, 1870). Similar to the male, excepting that the colours are, if any thing, purer, and the facial disk is much whiter; but we consider these differences merely a sign of age.

Young Female (Lake Onega, Russia, 3rd of July, 1869). Head, back, and upper parts generally dark umber-brown, much darker than in the adult; on the nape and upper part of the back the feathers have indistinct lighter centres; wings and tail the same as in the adult; facial disk dark dull umber-brown; a patch under the eye at the base of the bill and a broad stripe from the nostrils bordering the facial disk white; upper part of the breast dark umber-brown, marked here and there with light yellowish brown; rest of the underparts yellowish white, marked irregularly with dull pale brown; under wing-coverts white, spotted and tipped with dark brown; under tail-coverts dirty yellowish white, marked with brown; beak dull blackish at base, dirty yellow at tip.

Nestling. Entire upper parts uniform dull sooty umber, a few scattered white spots on the quills, and signs of lighter markings on the short tail; an indistinct white streak from the nostril ever each eye; lower portion of breast, abdomen, and under tail-coverts dull yellowish brown.

The general range of this Owl may tersely be given as the Northern and Central portions of the Western Palæarctic and Eastern Nearctic Regions, in the former extending as far east as the Ural range, and probably straggling to some extent into the adjoining countries of Asia. It has also been recorded as far out of its regular limits as Nepâl and North-eastern Africa; but these are very exceptional cases. It has, however, as below stated, been on several occasions met with in Southern Europe, though, with the above-mentioned exception, we know of no instance of its having occurred below the Mediterranean.

It is included in our British list as an occasional straggler; and Mr. Harting enumerates twenty instances of its having been procured or seen, several of which, however, require further

investigation. Still there are not a few authentic and undoubted instances of its occurrence here. Professor Newton enumerates many in his new edition of Yarrell's 'British Birds;' and we may refer our readers to that work for further particulars. The last occurrence we have heard of (through J. Rocke, Esq., of Clungunford) is one which took place this year at Leaton Knolls, Shropshire, the seat of Charles Spencer Lloyd, Esq., in whose possession the bird now is. Three occurrences in Scotland are enumerated by Mr. Robert Gray; but there is no instance on record of its having been found in Ireland. With regard to its occurrence in Norfolk, Mr. J. H. Gurney, jun., writes that it appears from the list of occurrences given in the latest publications on the subject that this bird has oftenest occurred in England in the spring, and then on the east coast.

In Norway and Sweden it is found far to the northward. Mr. Collett writes to us that in the former country it is numerous, and in some seasons is found breeding in the southern and south-eastern forests, at least up to Trondhjemsfiord, where it is sedentary in Œrkedal and Surendal. In Christiansand it is common in the fell dales, such as Aaseral, and has been observed at Stavanger; but here, as elsewhere, it is most generally seen during the winter. On the fell-sides it breeds up to the highest boundary of the conifer growth, as in Valders (*Printz*) and Læiten (*Esmark*). With regard to its range in Sweden, Nilsson states that it is found during summer in Northern Wermland, Dalecarlia, Herjeådal, and up to the fells, migrating southward during the winter season, being then observed in Skåne; and in certain seasons, as for instance 1838, 1840, 1844, and 1854, large numbers appear in Southern Sweden. In Finland it is one of the commonest of the Owls; and Dresser has repeatedly, when travelling through the country, seen it seated on the rough fences by the sides of the high roads. Von Nordmann observed it as far as Sotkamo, in Karelen.

Respecting its range in Russia our friend Mr. L. Sabanäeff writes us that "it is rare in the Governments of Moscow and Jaroslaf, but very common in those of Toula, Orel, and Kharkoff." Bogdanoff only observed it near Kazan; but Eversmann says that it occurs also in the Governments of Simbirsk and Saratoff. In the district of Ekaterinbourg it is tolerably numerous; and Mr. Sabanäeff observed it in the Ural up to about 60° N. lat. It nests there, he states, about the beginning of April, and sometimes, as in 1872, late in March (old style), depositing its eggs in hollow trees, and usually laying four, rarely six or seven eggs. In the autumn, about the end of September, it is sometimes seen near Moscow. Thus, as will be seen from the above, it ranges over a large portion of Russia.

In Poland it is very rare; and Mr. Taczanowski informs us that all the occurrences which have come under his notice took place in the winter season. Meyer records it as rare in Livonia; and it is equally so in Northern Prussia, though it is said to have bred in Hinterpommern. Count C. Wodzicki observed it in the Tatra Mountains, in the densest pine-woods, up to an altitude of 3000 feet. It was in continual motion from morning to evening; and its note, a monotonous cry like *kich*, *kich*, *kich*, was heard at all hours of the night.

Borggreve says that it probably occurs and is resident all over North Germany, and gives the following localities as those where it is found, viz. East Prussia (*Wiese and Boeck*), Pomerania (*Wiese*), Silesia (*Gloger*), Lausitz (*Tobias*), Anhalt (*Baldamus*), Mosel (*Schäfer*), Neuwied (*Brahts*), Hartz (*Saxesen*), and Tatra (*Schauer*). Pastor Pässler records an instance of its having bred in Anhalt; and Schütt states that it has also bred in the Murgthal; he also refers to two

examples having been shot in Baden in December. According to Kjærbölling it occasionally occurs as a rare straggler in Denmark. Mr. Poulsen observed it on Als; Mr. Steenberg records the occurrence of two at Helsingœr; and Mr. Bölling had a specimen from Fredriksburg. Bonnez found it at Herlufsholms wood in Seeland. According to Boie it occurs annually in Western Holstein, in the months of October and November. Mr. Hage has often shot it on Moen.

Baron de Selys-Longchamps refers to one example as having been observed by M. Putzeys at Arlon, and others near Metz by M. Hollandre; it is also said by Godron to be resident in the Vosges, though rare, and usually seen during migration. Degland and Gerbe include it in their work as found in all the large forests of France; but in Southern France it is accidental, having occurred but once or twice in the department of Var; it inhabits the Alps, Savoy, Dauphiné, and the Hautes- and Basses-Alpes. Mr. Howard Saunders writes to us that "there is a specimen of this Owl, obtained near Bagnères de Bigorre, French Pyrenees, in the collection of the Rev. W. Lawson, vicar of Lynton, North Devon. This is the only example from that district which I have actually examined; but when at Perpignan, Dr. Louis Companyo assured me that it was not uncommon in the higher regions, descending to the olive-plantations in winter." We can find no record of its having occurred in Spain or Portugal, though it may straggle thither. Dr. A. Girtanner informs us that it is to be met with in the forests on or near the mountains of Switzerland; and according to Bailly it is found in the more wooded cantons of Switzerland, especially Valais and the Vaudois side of the Jura, and is not rare in Savoy, according to locality, and remains there throughout the year. It is more especially found in the larch- and pine-woods near Albertville, and throughout the Tarentaise, Maurienne, and Chamounix; in other words, it is more especially distributed in the northern part of the country. In many parts it takes the place of the Little Owl, which may be looked on as accidental as soon as one leaves the inhabited parts and reaches the pine-forests. In Italy, according to Salvadori, this species occurs occasionally in the northern districts, and specimens from Piedmont are in the Turin and other collections. It has not yet been recorded from Sicily or Sardinia. Lindermayer includes it in his list of the birds of Greece as a rare visitor to the northern districts of that country; and Lord Lilford saw the skin of one at Corfu, which he was assured had been shot on the island. As regards its range in Austria, Count von Tschusi Schmidthofen kindly informs us that it is found everywhere in the mountain-forests of Austria. He himself obtained specimens from the Isergebirge, and saw in the collection of the forester Smetacek two specimens—one from Siebengründen, and the other shot in 1867 at the Rennerbaude. In the Riesengebirge it is called *Puppereule*, and is there well known, and does not appear to be rare. According to Purkinje it is common in the pine-woods at Weisswasser; and Lokay obtained it on three occasions in the neighbourhood of Prague (Fritsch, Cab. Journ. 1871, p. 185). Von Tschusi also saw a specimen in the Schwarzenberg collection at Wohrad, obtained in the Böhmerwald. Palliardi (Vög. Böhm. p. 14) obtained a pair which were shot near Franzensbad in the autumn of 1847. In Northern Austria it has been procured at Lasenburg; and a specimen obtained there is in the Imperial Museum at Vienna, as also one procured near the town of Vienna. In Eastern Austria it is rare at Hinterberger, has been once obtained at Lintz, and on several occasions specimens have been shot at Kremsmünster. In the mountainous parts of Styria it is generally distributed, and breeds there, especially near Mariahof, where the Rev. Mr. Hanf has obtained numerous specimens, and also

possesses in his rich collection the eggs, and the young birds in various stages of plumage. According to Seidensacher this Owl is found in Styria, but is rare, though it breeds there. He writes as follows:—"On the 4th of May, 1863, two young birds, fully feathered, were brought to me from Prekorje, about four miles from Cilli. They were dark brown, the facial disk narrowly bordered with white, the wings spotted with greyish white; the bill was bluish; iris light yellow. In order to see what they were, I reared them; and in October they had doffed the brown plumage and moulted into the ordinary plumage of Tengmalm's Owl. On the 1st of June, 1864, I found at Runtule, near Prekorje, two young birds, about eight or ten days old, in a hole in an old oak. A little below, in the same tree, a Roller had deposited her eggs."

We have no record of its having occurred in Southern Russia, or Asia Minor; but Professor Schlegel refers to it as having been met with in Egypt, where, according to Captain Shelley, it is of very rare occurrence. There is a specimen in the British Museum from Mr. Turnbull's collection.

Eastern Siberia is also given by Professor Schlegel as a locality where it has been obtained; but none of the Russian travellers who explored Siberia included it. Pallas certainly speaks of it as "rare in Siberia," but gives no instance of its having occurred there. Dr. Jerdon, however, writes that it has been found in the cachar of Nepâl, *i. e.* the inner Himalayas.

In America, as in Europe, it is chiefly found in the northern portion of the continent. Professor Baird states that it is entirely a northern species, common at Hudson's Bay, but of rare occurrence within the limits of the United States. Mr. Boardman writes that it is found, though rare, in Maine. The only notice of it as a western species is by Dr. Townsend, who gives it as a bird of Oregon. Dr. Richardson writes that he believes "it inhabits all the wooded country from the Great Slave Lake to the United States. On the banks of the Saskatchewan it is so common that its voice is heard almost every night by the traveller wherever he selects his bivouac." According to Captain Blackiston it has been found breeding on the Mackenzie by Mr. Ross. Mr. Elliot has pointed out (Ibis, 1872, p. 50) that *Nyctale albifrons*, Shaw, is this species in immature plumage; and in this we fully agree with him. Under the name of *Strix frontalis*, Professor Lichtenstein cites it as a bird of California; and Dr. Hoy procured it in Wisconsin. We have carefully compared specimens from North America with typical European examples, and have fully convinced ourselves that there is no difference whatever between the birds from the two continents.

This Owl is strictly nocturnal, appearing but rarely in the day time; and when it does, it is so dazed by the light as to seem perfectly stupid. It remains in the dark recesses of the forest until dusk, when it leaves its hiding-place and commences to hunt after food. It preys on small birds and mammals, and, according to some authors, beetles. Its note is a single melancholy call, repeated at intervals of a minute or two, and is heard only during the night.

It breeds early in the season, depositing its eggs, which range from four to six in number, in a hollow tree, selecting any suitable hole for the purpose of nidification, the eggs being placed on the bottom of the hole without any regular nest being made. The eggs, of which we have several before us out of Dresser's collection, obtained in Styria and Lapland, are pure white, in shape very round, and measure from $1\frac{11}{40}$ by $1\frac{5}{40}$ inch to $1\frac{14}{40}$ by $1\frac{7}{40}$ inch. The grain of the shell is, compared with eggs of *Athene noctua*, rather finer than that of those of this latter bird.

With regard to its habits and nidification in Scandinavia we give the following extract from Mr. Wheelwright's notes on the ornithology of Lapland. This gentleman writes that "this species was, next to the Hawk Owl, the commonest Owl in our forests; but being much more nocturnal in its habits than the Hawk Owl, it was not so often seen,—not that the light appears much to affect its vision; for here the summer nights are as light as day, and we rarely went into the forest on any night without seeing this pretty little Owl hawking after its prey. . . . . This Owl has a much more southern range than the Hawk Owl; for we not unfrequently take nests in South Wermland; but, strange to say, they are met with, like those of the Crossbills, only about every third year. This Owl goes to nest early; after the end of May you rarely find eggs. It has been remarked that whenever this Owl has appeared in autumn in the very south of Sweden, a severe winter has always followed. We found it to occupy in the Quickjock forest precisely the same range as the Hawk Owl, and we never by any chance saw one on the fell-sides higher than the fir-region. It is a bold, voracious little bird. One light night I shot a female in full chase after Lemming on a frozen lake. In Wermland on one occasion, having caught an old female on the eggs, I took her home in a small fishing-creel, and, casting in a Titmouse which I had shot, found it nearly devoured when I arrived home. I had her for a long time in a cage; and a very pretty little pet she was, becoming very tame. The call-note was a very musical soft whistle, which, however, I never heard except in the evening and night. I could never detect the slightest difference in plumage between the male and female. Till I took the nest in Wermland no Swedish naturalist appeared to be aware of the fact of this little Owl breeding so far south. We took our first nest at Quickjock on the 2nd of May, and our last on the 30th of May. In Wermland we often take the nest in the end of April."

A most important discovery has lately been made by our correspondent Mr. R. Collett, of Christiania, with regard to the configuration of the skull of this species. Dr. Kaup drew attention to the fact that the ear-orifices in the Owls of this genus are asymmetrical; but to Mr. Collett belongs the credit of having discovered and pointed out that this extends also to the skull. Mr. Collett has published a most exhaustive anatomical paper on the subject (P. Z. S. 1871, pp. 739–743), to which we refer our readers for further particulars.

We are enabled by the liberality of the Council of the Zoological Society to make use of the woodcuts used in illustrating Mr. Collett's paper, which we give below, and which will enable our readers to see at a glance the peculiar configuration of the skull of this Owl.





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The figures and descriptions are taken, that of the adult male from a specimen in Dresser's collection, obtained in Norrland, Sweden, in February 1871, and that of the young female from a specimen from Norway, obtained on the 17th July, in Mr. F. Bond's collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Norrland, February 1871. *b*, ♀. Bosjö Kloster, March 27th, 1870 (*Sundevall*). *c*, ♀. Sweden, September (*Sundevall*). *d*. Nedenæs, Norway (*Collett*). *e*. North America (*Krider*). *f*. Labrador (*Möschler*). *g*, *h*, *i*. Archangel (*Henke*). *j*, ♀ *juv*. Wuitegra, Lake Onega, July 3rd, 1869 (*Meves*). *k*, *pullus*. Barcelonnette, Basses-Alpes, 1871 (*Fairmaire*).

E Mus. Smithsoniano.

a, ♀. Nulato river, April 28th, 1867 (*W. H. Dall*).

E Mus. F. Bond.

a. Norway, July 17th, 1866.

Genus SCOPS.

Asio apud Brisson, Orn. i. p. 495 (1760).
Strix apud Linnæus, Syst. Nat. i. p. 132 (1766).
Stryx apud Pallas, Reis. Russ. Reichs, i. p. 456 (1771).
Scops, Savigny, Syst. Ois. de l'Egypte, p. 47 (1810).
Bubo apud Boie, Isis, 1822, p. 549.
Ephialtes apud Keyserling & Blasius, Wirbelth. Eur. p. xxxiii (1840).

This group of small horned Owls contains, according to Mr. Sharpe, twenty-five species (some of which he again subdivides into several subspecies), which inhabit the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, only one species being found in the Western Palæarctic Region.

These Owls are by no means strictly nocturnal; for they may be seen flying about at midday during the brightest sunshine. But it would appear that this is rather the exception than the rule; for their clear ringing note is heard almost all through the night. Their flight is soft and noiseless; and they affect groves, gardens, and well-wooded places. With us in Europe these birds are chiefly migratory, passing south at the approach of winter. They feed on small mammals and birds and especially on large insects of various kinds. They nest in hollow trees, and deposit several small roundish white eggs.

Scops giu, the type of the genus, has the bill decurved from the base, the under mandible notched, cere small; the nostrils round, concealed by bristly feathers; head rather small, furnished with two tufts of feathers; facial disk incomplete; auditory conch small, without operculum; wings long, reaching to the end of the tail, the first quill about equal to the fifth, the third longest; tail short, square; tarsi rather long, feathered in front nearly to the base of the toes, which are bare; claws moderate, curved, acute.



SCOPS OWL.

SCOPS GIU.

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SCOPS GIU.

(SCOPS OWL.)

Asio scops, Briss. Orn. i. p. 495, pl. 37. fig. 1 (1760).
Strix scops, Linn. Syst. Nat. i. p. 132 (1766).
Strix giu, Scop. Ann. I. Hist. Nat. p. 19 (1769).
Le Scops ou Petit Duc, Buff. Hist. Nat. Ois. i. p. 353 (1770).
Stryx pulchella, Pall. Reise Russ. Reichs, i. p. 456 (1771).
L'Assiuolo, Cetti, Uccelli di Sardegna, p. 60 (1776).
Strix zorca, Gmel. Syst. Nat. i. 289 (1788, ex Cetti).
Strix carniolica, Gmel. tom. cit. p. 290 (1788, ex Scop.).
Strix pulchella, Gmel. tom. cit. p. 290 (1788, ex Pall.).
Scops ephialtes, Savigny, Syst. Ois. de l'Egypte, p. 47 (1810).
Bubo scops (L.), Boie, Isis, 1822, p. 549.
Scops asio, Steph. in Shaw's Gen. Zool. xiii. pt. 2, p. 51 (1826, nec Linn.).
Scops aldrovandi, Flem. Brit. Animals, p. 57 (1828).
Scops carniolica (Gm.), C. L. Brehm, Vög. Deutsch. p. 126 (1831).
Scops minuta, C. L. Brehm, op. cit. p. 1006 (1831).
Scops europæus, Less. Traité d'Orn. p. 106 (1831).
Scops senegalensis, Swains. Classif. of B. ii. p. 217 (1837).
Scops zorca (Gm.), Swains. tom. cit. p. 217 (1837).
Ephialtes scops (L.), Keys. & Blas. Wirbelth. Eur. p. 33 (1840).
Otus scops (L.), Schlegel, Rev. Crit. p. 14 (1844).
" *Scops kamtschatchensis*, Verr.," Bp. Rev. et Mag. de Zool. 1854, p. 543.
Scops minor, C. L. Brehm, Vogelfang, p. 43 (1855).
Scops rupestris, C. L. Brehm, ut suprà (1855).
Scops rufescens, C. L. Brehm, ut suprà (1855).
Scops pygmæa, C. L. Brehm, ut suprà (1855).
Scops vera, Finsch, J. f. Orn. 1859, p. 381.
Ephialtes zorca (Gm.), Jaub. & Barth.-Lapomm. Rich. Orn. Mid. Fr. p. 78 (1859).
Scops longipennis, Kaup, Trans. Zool. Soc. iv. p. 223 (1862).
Scops giu (Scop.), Newt. Ooth. Wolley. p. 153 (1864).

Le Petit Duc, French; *Mocho pequeño*, Portuguese; *Corneja*, Spanish; *Assiuolo*, Italian; *Kokka*, Maltese; *Marouf*, Arabic; *Maroof*, Moorish; *Zwerg-Ohreule*, German; *Kanuk*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 436; Werner, Atlas, *Rapaces*, pl. 42; Fritsch, Vög. Eur. taf. 13. fig. 5;

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Naumann, Vög. Deutschl. taf. 43. fig. 3; Gould, B. of Eur. pl. 41; id. B. of G. Brit. i. pl. 33; Roux, Orn. Prov. pl. 48.

Ad. suprà cinereus, brunnescente cervino et ochrascente cervino lavatus, plumis exquisitè nigro-fusco vermiculatis: pileo magis rufescente, plumis centraliter nigro-fusco striatis: nuchâ indistinctè albido notatâ: corpore suprà nigro-fusco striato: scapularibus albo notatis: remigibus primariis in pogonio externo albo et albicante cervino fasciatis: caudâ nigro, fulvido et fulvescente cervino fasciatâ et nigro-fusco vermiculatâ: corpore subtùs griseo-albo, imo pallidiore, ubique nigro-fusco vermiculato et conspicuè nigro-fusco striato: facie griseo-albâ, griseo punctatâ et vix brunneo notatâ, plumis elongatis pilei lateralibus in pogonio interno albis: fasciâ in colli latere utroque nigro-fuscâ, plumis ad basin albicantibus et rufescenti-cervinis: rostro nigro: iride flavâ: tarsis pennatis, pedibus fuscis, unguibus nigricantibus, ad basin fere albis.

Adult Male (Seville, 30th April). Upper parts greyish varied with orange or brownish buff, the crown washed with pale reddish buff; all the feathers on the crown with a central black stripe, which widens towards the base; ear-tufts like the other feathers, but greyish white on the inner web; on the back of the head is an indistinct greyish band; feathers on the back and upper parts generally greyer than on the head, more sparingly striped with black, and all minutely vermiculated with dark brown; some of the scapulars boldly marked with white; primary quills on the outer web dark greyish brown slightly washed with orange-buff and barred with white, these bars being here and there tinged with orange-buff; on the inner web deep sooty grey, towards the tip barred with light brownish grey, and on the basal and outer portion of the web marked with dull white blotches; secondaries similar, but more like the back in colour, and the white bars on the outer webs are wanting; wing-coverts varied with brown, the larger ones spotted with white on the outer web; tail light brownish, vermiculated with dark brown and barred with dull fulvous margined with dark brown, these bars becoming whitish towards the tip; facial disk grey, minutely speckled with greyish white and a little brown; entire underparts greyish white, finely but irregularly vermiculated with greyish brown and varied with pale brown; breast and flanks broadly blotched here and there, and abdomen sparingly striped with blackish brown; below the auriculars a band of black feathers extends below to the sides of the neck, the feathers being whitish or fulvous at the base; lower abdomen whiter than the rest of the underparts; beak black; iris yellow; claws blackish towards the tip but nearly white at the base. Total length about 7·5 inches, culmen 0·7, wing 5·7, tail 2·75, tarsus 1·0.

Adult Female. Resembles the male, but is rather larger in size.

Young. Differs from the adult merely in being rather more rufous in tinge of colour.

In Europe the present species inhabits the southern portion of the continent during the summer season, straggling, however, as far north as the British Isles; and during the winter it retires to North Africa. In Asia it is met with as far east as Turkestan, and very closely allied forms are met with as far east as Japan.

In Great Britain it is known only as a rare straggler. Professor Newton, referring to the various instances on record of its occurrence in England, writes (Yarr. Brit. B. i. p. 174) as follows:—"The example of this little Owl, which was figured by Selby, was taken near London; and I am indebted to Mr. Joseph Clarke, of Saffron Walden, for the knowledge of the occurrence of two specimens on the estate of Lord Braybrooke, at Audley End, in Essex, all three having

been met with prior to November 1837. Dr. Hastings, in his 'Worcestershire,' notices that one was taken alive near Fladbury. Of those shot in Yorkshire, as already mentioned, Mr. Fothergill's was killed near Wetherby in the spring of 1805, and is the subject of Bewick's woodcut representing this species, while others are in the Foljambe collection at Osberton. The Scops has been obtained some four or five times in Norfolk, at seasons so opposite as June and November, as well as at Brill, in Buckinghamshire, in the spring of 1833 (Zool. p. 2596), near Pembroke in the spring of 1868 (Zool. s. s. p. 1671), and many years ago, according to Mr. A. C. Smith, in Wiltshire. Mr. Gould mentions the occurrence of one in Berkshire, in 1858, and of another more recently killed by Mr. J. H. Leche, of Carden Park, Cheshire. Mr. Rodd has recorded that one was shot at Scilly, in April 1847, and (Zool. s. s. p. 2482) another taken at Trevethoe, on the north coast of Cornwall, early in January of the present year (1871)." In Scotland it appears to have only once occurred, a specimen having been shot at Morrish, near Golspie, in Sutherlandshire, in May 1854. Mr. St. John (Tour in Sutherl. i. p. 122) states that it has been found breeding on heaths near the Oykel river; but this must be a mistake; and the statement that it has bred in Durham is also untrustworthy, as I scarcely need point out. Thompson (B. of Ireland, i. p. 85) writes of it, "has been obtained at least twice in Ireland. I have been informed by Robert Ball, Esq., of Dublin, that a Scops-eared Owl was shot in the month of July, a few years ago, by the gamekeeper at Loughcrew, county of Meath, the seat of J. W. L. Naper, Esq., in whose possession it now is. The specimen was kindly sent to Dublin for the examination of Mr. Ball, and proved similar to a *Strix scops* in his collection. Mr. Joseph Poole, of Killiane, Wexford, wrote to me on the 19th of April, 1847, that a Scops-eared Owl, which had came under his notice, was killed a few days before that date, near Kilmore, in the south of the county."

It has not been observed in Scandinavia, nor does it inhabit Finland or the north of Russia; but it is found in Central and Southern Russia. Mr. L. Sabanäeff says that it is found in the Zaraisk district, and breeds not unfrequently in the Orloff Government. Bogdanoff only met with it in the lower valley of the Volga. Sabanäeff himself met with it on both slopes of the Ural up to about 57° N. lat., but only found it in the conifer-woods and not in the birch-forests. It does not appear to have been met with in the Kazan or Simbirsk Governments—which, Sabanäeff remarks, is somewhat strange; for, as above stated, it is found at Zaraisk, in the northern portion of the Riazan Government. I find no record of its occurrence in the Baltic provinces; and Borggreve (Vogelf. Nordd. p. 65) says that, according to Tobias, it has once been obtained at Hirschfeld, in Silesia, and Schaefer obtained one in Luxemburg. One in the collection of Mr. Glimann, of Münden, is said to have been obtained at Uelzen, in Hanover. According to Mr. Gätke it has on one occasion (in the month of May) been obtained in Heligoland. In France it is stated to be common in Languedoc, Provence, Dauphiné, and the Hautes Pyrénées, from March to October, and is even occasionally met with in the vicinity of Paris. Professor Barboza du Bocage includes it in his list of the birds of Portugal as "rare;" and Dr. E. Rey states (J. f. O. 1872, p. 142) that he met with it throughout Portugal, but it was not common. He also observed it in the city of Lisbon.

When in Spain, nearly ten years ago, I frequently met with this Owl, both near Madrid and in Catalonia; and it appears to be very generally distributed throughout the country in the

summer season. Colonel Irby states (Orn. Str. Gibr. p. 59) that it is abundant in Andalucia, but entirely migratory. A few remain over the winter near Seville, but he never met with them at that season near Gibraltar, where the earliest date of the vernal migration noticed by him was the 4th of March. I am also indebted to Lord Lilford for the following note:—"I have very little to add to what I have already published in 'The Ibis' with regard to this species in Spain or elsewhere. I may, however, mention that though, as a rule, it is a spring migrant to Spain, returning southwards in the autumn, yet a few remain in Andalucia throughout the year. Very abundant in the promenades and avenues about Seville in May." Passing eastward, again, I find it recorded from Savoy by Bailly, who says that from the beginning of April it is common in the warmer districts, such as the neighbourhood of Chambéry. Salvadori and Doderlein both state that this is the most decidedly migratory of the European Owls, abandoning Italy and even Sicily in autumn, and returning to the latter about the middle of March. It is everywhere abundant, preferring holes in trees as a site for its eggs, but occasionally depositing them in cavities amongst the rocks. Cara states that it is resident in the island of Sardinia; but Salvadori appears doubtful of this. According to the observations of Savi and Spallanzani, the food of this species consists of insects and small vertebrates. Mr. C. A. Wright, who records it from Malta, says (Ibis, 1864, p. 49), it is "very plentiful in the seasons of its migrations, and by far the commonest Owl found here. It commences arriving towards the end of February or beginning of March, and continues passing till May, reappearing in September, October, and November. It is sold in the market in great numbers, with Nightjars (*Caprimulgus europæus*) and other birds for the table, and is considered good eating by the natives. It is easily tamed, and becomes very familiar in captivity. A few probably winter here, as individuals are taken in December and January. In 1862–63 I obtained nearly a dozen specimens in the market, at different times, in these months." During the summer season it is common in Greece and the adjacent islands, and is, Lord Lilford writes (Ibis, 1860, p. 134), "very common in Corfu during the summer months, arriving about the beginning of April, and breeding in the old olive-groves, which, from that time to the middle of October, resound with their melancholy and monotonous cry." Dr. Krüper says that in Greece and Macedonia it breeds, and is found both in the mountains and on the plains. It is most numerous on the island of Naxos, where it breeds in the houses. A few probably remain over the winter in the Cyclades and near Athens, as its call-note has been heard in November. It arrives late in March or early in April, and has eggs in May.

In Southern Germany it is in some localities quite a common summer visitant. I met with it near Cilli, in Styria, when collecting with the late Mr. E. Seidensacher, but was there rather too early to obtain its eggs; for it does not lay there before the middle of May, though it arrives early in April. It was common not far from Cilli, in a locality where there were many old oaks full of holes. Dr. Fritsch writes (J. f. O. 1871, p. 183), "The only specimen killed in Bohemia appears to be that in the Kablic collection, which was shot in May 1838, in the Riesengebirge. Palliardi's statement that in the Frauenberg Museum there are six specimens is correct; but they were sent there from Styria. The specimens in H. Hromadko's collection were obtained from Hungary; and I may add that neither I nor my friend Lokaj ever saw one." The Ritter von Tschusi-Schmidhofen says that it breeds in the Krems valley, in Austria, whence he has a specimen; and Count Casimir Wodzicki, who states that it occurs in the mountains of

Galicia, adds that it is very rare. It is found in the countries bordering the Lower Danube and in Turkey, and is stated to be common in Southern Russia, especially in the southern portion of the Crimea; and Mr. Goebel has found it breeding in the Uman district. Dr. Krüper informs me that it is common in Asia Minor, where, as in Greece, it breeds both in the hills and on the plains. Near Smyrna, he says, it arrives early in April. Canon Tristram ("On the Ornithology of Palestine," Ibis, 1865, p. 261) writes:—"Very common in spring in old ruins and olive-groves, returning to Palestine about the middle of April. We found the nests both in the walls of ruins and in hollow trees. No less than four birds were caught on their eggs in holes of olive-trees. It does not come out so soon as *Carine glaux*, indeed is seldom heard till after sunset. All my specimens are a little larger and decidedly paler in hue than those from the south of Europe. In this respect it appears to approach the Indian *Scops pennatus*; but I have not a specimen by me for comparison."

It visits North-east Africa during winter; and Captain Shelley writes (B. of Egypt, p. 178) as follows:—"This little Owl extends its range throughout Egypt and Nubia, where it may generally be met with in pairs or families. It appears to be most frequently found near Alexandria and Cairo, but is nowhere plentiful." Dr. Th. von Heuglin says (Orn. N.O.-Afr.) that it arrives in North-east Africa in the autumn, and is found there during the winter and in spring, southward to Abyssinia and Sennaar, and is usually met with wandering about in pairs or families. Dr. Vierthaler saw fifteen or twenty on the 25th January on the Blue Nile. Von Heuglin himself observed it near Cairo between the 9th and 12th April; and on the 24th September he saw it again in Central Nubia. It feeds chiefly on locusts, and appears at midday not only in the shady groves, but now and again in the thin open bushes. In North-west Africa it remains to breed; and Mr. O. Salvin writes (Ibis, 1859, p. 190), "in the Djendeli district we found this Owl abundant; every night its peculiar cry might be heard from one or more individuals. Several birds were brought to us by the Arabs, which had been caught on their nests. One of these, whose wing had been injured, we kept for some days in the tents; but after a time it disappeared, having probably hopped off in the night. The cry of the Scops-eared Owl is admirably expressed by the Arabic name *Marouf*." Canon Tristram says that it is rare in the oases; and Mr. L. Taczanowski says that he only observed it once in the forest of Ajmorka. According to Favier (*fide* Irby, *l. c.*) it "occurs near Tangier on passage, crossing to Europe in March, returning to winter further south in September and October. Many pass the breeding-season in Morocco." It is met with as far south as Senegal; but there is another closely allied form which is resident in Southern and North-eastern Africa, *Scops capensis*, Smith, which differs from the European *Scops giu* in being smaller, having shorter wings, being darker grey in general coloration, and having the tarsus feathered scarcely so far towards the joints of the toes.

To the eastward the European form of the Scops Owl is found probably as far as Turkestan; for Dr. Severtzoff assures me that his specimens are absolutely undistinguishable from European birds. Mr. Blanford, who met with it in Persia, says:—"The common *Scops* abounds in gardens on the Persian highlands. There is scarcely a village with large trees in which the monotonous note of this little Owl may not be heard, commencing when it grows dark in the evening, and continuing at intervals throughout the night. An especially favourite tree is a thick cypress. A single specimen was shot by Major St. John; but I have no note of the locality

or date. I have often tried to shoot these birds; but as they keep to the thickest trees, never stir abroad in the day, and do not commence to call till it is just too late to see them, it is not easy to secure specimens." Dr. Severtzoff says that it breeds throughout Turkestan, except in the south-western portion, where it occurs only during passage, but may possibly breed there also. In localities at an altitude of from 3000 to 4000 feet it is a migrant—but breeds at an altitude of from 4500 to 8000 feet, where only the larch, apple-, and ash trees are met with.

Mr. R. B. Sharpe, who has lately been working at the Owls, and whose catalogue of the nocturnal birds of prey has just been published, enumerates, besides *Scops capensis*, six subspecies of the Scops Owl—*Scops pennatus*, *Scops stictonotus*, *Scops japonicus*, *Scops malayanus*, *Scops rufipennis*, and *Scops brucii*, all of which inhabit Asia. The first of these, *Scops pennatus*, Hodgs. (J. A. Soc. Beng. vi. p. 369), is said to be "similar to *S. giu*, but of a very dark grey colour, and distinguished by its grey ear-coverts; the ear-tufts for the most part rufous-ochre, and not mottled with white as in European examples." It is said to inhabit the Indian peninsula.

Scops stictonotus, Sharpe, *op. cit.* p. 54, should, it appears to me, stand under the name of *Scops bakkamœna*, Swinhoe (Ibis, 1860, p. 47), although this latter gentleman's description is somewhat vague and indistinct. I have examined a specimen in the collection of Mr. Swinhoe which comes exceedingly close to our European bird; and I scarcely feel justified in keeping it apart even as a subspecies or a local form. Mr. Sharpe gives a very accurate description of the differences between it and true *Scops giu* as follows:—"This little Owl belongs to the same group as *S. giu*, and is quite different in appearance without giving very tangible characters for specific separation. Its general colour is ashy brown above, without any greyish shade; the ear-coverts dusky grey; the collar round the neck is very indistinct, and is represented by certain pale buff-coloured bars or spots without any appearance of white whatsoever; on the back, however, are several very distinct spots and bars of the same pale buff colour, giving a very marked character to these peculiarities." It is said to inhabit China, ranging westwards to Siam and the eastern Himalayas.

Scops japonicus, Bp. (Rev. et Mag. de Zool. 1854, p. 543), is said by Mr. Sharpe to be a larger and browner bird than *S. giu*, in general plumage darker, especially on the ear-coverts, which are dusky as in *S. stictonotus*, and not silvery grey as in *S. giu*; and "the lower part of the tarsus is naked." It inhabits Japan.

Scops malayanus, Hay (Madr. Journ. xiii. ii. p. 147), is, Mr. Sharpe says, "a well-marked form of the *S. giu* group, and by no means so very different in appearance from *S. capensis*; but it is chiefly remarkable for the ocellated appearance of the head and hind neck, the latter having very broad white bars so as to form a striking contrast to the head and back; the ear-coverts are dusky as in *S. stictonotus*." Lord Walden in his original description says, "the under surface is distinctly divided into two equal portions—the first, including the chin, throat, and breast, being wood-brown, mottled with a little white, light rufous, and black, irregularly distributed; the lower division, including the belly, vent, thigh-coverts, and under tail-coverts, is white, speckled with deep brown and light rufous." It is stated to inhabit the Malayan peninsula, ranging northwards into Southern China.

Scops rufipennis, Sharpe (*op. cit.* p. 60), is said by Mr. Sharpe to be "very closely allied to

S. malayanus, and resembling it in the dusky grey ear-coverts, but distinguished by the absence of the white ocellations on the hind neck, and of the bars on the centre tail-feathers, and more especially by its rufous quills." It inhabits the eastern Ghauts, India.

Scops brucii (Hume, Str. Feathers, i. p. 8). Of this form Mr. Sharpe has examined the type, which he speaks of as being merely a race of *S. giu*, but quite peculiar in general coloration, being very uniform ochraceous grey.

Several of the above subspecies appear to me to be scarcely separable, even as subspecies, from *Scops giu*; but as Mr. Sharpe has had much more ample opportunities of studying this group than I have, I have deemed it best to follow his view. Still I think that, if ever a larger series of all the above forms be collected and compared, they will all be united under the name of *Scops giu*.

In habits the present species is by no means strictly nocturnal; for I have not unfrequently seen it in Spain flying about during the brightest portion of a hot summer's day, apparently undazed by the bright sunshine. It frequents the groves and evergreen-woods, not, so far as my experience goes, the dense forests, but places where large trees are scattered about, and the spaces between are filled up with a tolerably thick undergrowth of brambles and low bushes. It breeds, so far as I can ascertain, invariably in hollow trees, and scarcely ever, like the Little Owl, in old ruins or the clefts of rocks. Seidensacher informed me that near Cilli it usually breeds in the holes of trees, sometimes high up, and at others close to the ground, but that he has occasionally found its eggs in old nests in conifer trees. It takes possession of its nesting-place some time before the eggs are deposited, and sits very close when it has eggs, so much so that it may usually be caught in the nest-hole. In its flight it much resembles the Little Owl; but when perched it is a much thinner-looking bird, and may easily be distinguished. It feeds chiefly on insects of various kinds, but is said to occasionally catch and eat small birds and mammals. Lord Lilford states that one he kept alive at Corfu for some months fed, by preference, on the humming-bird moth, which abounds in the island in August and September. He also mentions a curious superstition respecting this species: "I was gravely assured by a Spanish lady," he says, "that this species and the Barn-Owl enter the chapels and churches in Andalucia to drink the oil in the lamps which are kept burning in the shrines of the saints, and that it behoved all good Christians to slay them whenever they found them, adding, 'Son las gallinas del demonio, Señor.'" Mr. H. Seebohm, who has had opportunities of observing the present species in Greece and Asia Minor, sends me the following note:—"*Scops giu* is not a very uncommon bird in Greece and Asia Minor; but it is one which is very rarely seen. *Athene noctua* is often seen in the daytime; but *Scops giu* seems more especially to be a nocturnal bird. I never once met with it on the wing; but I have often listened to its monotonous note, as monotonous as a passing-bell, and almost as melancholy. To my ears this note is exactly represented by the sound of the syllable *ahp*, repeated in an unvarying and desponding tone every ten or twenty seconds. This bird is generally, if sparingly, distributed all over the country, from the sea-shore almost, if not quite, up to the pine-regions on the mountains. I have often listened to its note as I lay in my camp-bed in a peasant's cottage at Agoriane, halfway up the Parnassus, when it was almost too cold to sleep with comfort; and I have heard it from the hotel at Buyukdere, on the Bosphorus, when, with window wide open, the heat made it

still more difficult to pass the night in happy unconsciousness even of ornithological sounds. It remains in these countries all the year round, breeding in the hollow trees in the gardens, orchards, or cemeteries. It lays five to six eggs about the end of May."

I possess a series of the eggs of the Scops Owl, obtained in Spain and Styria, which are roundish in shape, pure white in colour, the surface of the shell smooth, but with scarcely any gloss. In size they vary from $1\frac{7}{40}$ by $1\frac{1}{40}$ to $1\frac{11}{40}$ by $1\frac{13}{40}$ inch.

The specimen figured is an adult male from Seville in my own collection, and is the bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Seville, April 30th, 1871 (*Lord Lilford*). *b*, ♀. Casa de Campo, Madrid, April 17th, 1865 (*Lilford*). *c*. Malta market, December 1863 (*C. A. Wright*). *d*, ♂. Gallenhofen, S. Styria, May 20th, 1872 (*Ritter von Tschusi-Schmidhofen*). *e*, ♂. Ortakeuy valley, Turkey, September 19th, 1871 (*Robson*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Seville, April 20th, 1868 (*H. S.*). *c*, ♀. Malaga, June 16th, 1869. *d*, ♀. Granada, June 20th, 1870. *e*, *f*, *g*, *juv.* Granada, July 14th, 1871. *h*, *i*, *pulli.* Granada, June 28th, 1870. *j*, *k*, ♂ ♀. Valencia, April 1873.

Genus BUBO.

Strix apud Linnæus, Syst. Nat. i. p. 131 (1766).
Bubo, Forster, Synopt. Cat. Brit. B. p. 3 (1817).
Otus apud Schlegel, Rev. Crit. p. 13 (1844).

This group, comprising the largest and most powerful of the Horned Owls, contains seventeen species, which inhabit the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, one species only being found in the Western Palæarctic Region. Another species, *Bubo ascalaphus*, Savigny, which inhabits North Africa, may probably straggle just within the limits of the Western Palæarctic Region; but I have not deemed it advisable to include it.

These birds, which are very powerful and rapacious, are nocturnal in their habits, but are also able to fly by day without being dazed by the light when roused from their hiding-place. They feed on birds of many sorts, even the larger game-birds, hares, rabbits, small mammals, and even young fawns, and are extremely destructive to game. Their note is a weird and wild hoot; and their flight, though soft and noiseless, is strong and swift. They are shy and wary, usually resorting to some dark ravine or dense forest glade during the day, and hunting for their prey at night. They nest in a cleft or on a ledge of a rock, or else in a tree, usually making a very slight nest, but occasionally building a large bulky structure. Their eggs are large, roundish, and pure white.

Bubo ignavus, the type of the genus, has the bill moderate in size, strong, decurved from the base, lower mandible notched; nostrils rounded, placed in the anterior part of the cere; ear-conch simple, elliptical, rather small; head furnished with two large tufts of feathers; facial disk incomplete above the eyes; wings rather short, but broad and concave, the first quill about equal to the sixth, the third or fourth longest; tail moderately long, broad, slightly rounded; legs and toes covered with close, short feathers; claws long, stout, curved, and tapering to an acute point.



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EAGLE OWL.
BUBO IGNAVUS
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BUBO IGNAVUS.

(EAGLE OWL.)

The Great Horned Owl from Athens, Edwards, Gleanings, v. p. 37, pl. 227 (1758).
Strix bubo, Linn. Syst. Nat. i. p. 131 (1766).
Strix bubo, var. *β. atheniensis*, Linn. tom. cit. p. 131 (1766), ex Edwards.
Strix bubo, L., Daud. Trait. d'Orn. ii. p. 208, "Old World, and even America" (1800).
Strix bubo (var. A) *atheniensis*, Daud. Trait. d'Orn. ii. p. 209, "Greece" (1800).
Bubo ignavus, T. Forster, Syn. Cat. Brit. Birds, p. 3 (1817).
Bubo microcephalus, Steph. in Shaw's Gen. Zool. xiii. p. 55, "England and Europe" (1825).
Bubo maximus, Flem. Brit. Anim. p. 57 (1828).
Bubo europæus, Less. Orn. p. 115 (1831).
Bubo germanicus, C. L. Brehm, Vög. Deutschl. p. 119, "Germany" (1831).
Bubo septentrionalis, C. L. Brehm, tom. cit. p. 120, "north of Germany" (1831).
Strix turcomana, Eversm. Add. Pall. Zoogr. p. 3, "between the Caspian and Lake Aral (1835).
Otus bubo, Schleg. Rev. Crit. p. 13 (1844).
Bubo grandis auct.? C. L. Brehm, Cab. Journ. 1853, p. 346.
Bubo scandiacus (Linn.), Cab., Cab. Journ. 1854, p. 367, "Sarepta" (nec Linn.).
Bubo sibiricus, Eversm. Licht. Nomencl. Av. p. 7, "Ural" (1854).
Bubo pallidus, C. L. Brehm, Vogelfang, p. 41, "Siberia, Ural" (1855).
Bubo melanotus, C. L. Brehm, ut suprà (1855).

Grand-duc, French; *Bufo*, *Corajão*, Portuguese; *Buho grande*, Spanish; *Soriguer*, Catalan; *Gufo reale*, Italian; *Lucaru*, Sicilian; *Uhu*, *Bergeule*, *Grossherzog*, German; *Bjergugle*, *Klippeugle*, Danish; *Berguf*, Swedish; *Bjerugle*, *Hubeo*, Norwegian; *Huuhkapöllö*, *Huuhkaja*, Finnish; *Filin*, Russian; *Sowa puhacz wlaśawy*, Polish (*Taczanowski*); *Uku*, *Klokteuku*, Bashkir; *Pelin*, Ziranin.

Figuræ notabiles.

D'Aubenton, Pl. Enl. no. 435; Werner, Atlas, *Rapaces*, pl. 45; Kjærb. Orn. Dan. taf. viii.; Frisch, Vorstell. Vög. Teutschl. taf. 93; Fritsch, Vög. Eur. pl. 12. fig. 5; Sundevall, Svensk. Fogl. pl. xxiv. fig. 4; Gould, B. of E. pl. 37; id. B. of G. B. part x.; Naumann, Vög. Deutschl. taf. 44; Bettoni, Ucc. Lomb. tav. 107; Susemihl, Vög. Eur. pl. 50; and Edwards, *l. c.* pl. 44 (var. *sibiricus*).

Ad. suprà pallidè rufescenti-ochraceus, plumis omnibus nigricante variegatis: pileo nigro, plumis vix ochraceo marginatis: plumis suprà oculos valdè elongatis: remigibus nigricantibus ochraceo fasciatis: rectricibus rufescenti-ochraceis, nigro fasciatis et marmoratis: subtùs ochraceus, mento et gulâ albicantibus: pectore, abdomine et hypochondriis maculis longitudinalibus nigricantibus striatis: abdomine imo, crisso, tibiæ et tarsi plumis, subcaudalibusque nigricante undulatis et vermiculatis: iride fulvescenti-aurantiacâ: rostro nigricanti-corneo.

Adult Female (Uppland, Sweden, April 1871). Head and neck light sandy rufous, each feather having a broad black centre, and being marbled with that colour; feathers on the crown black, marbled with rufous on the margins; above each eye a conspicuous tuft of elongated feathers forming two large horns, feathers round the facial disk rufous grey, barred with black; bristles at the base of the bill white, tipped with black; upper parts generally reddish ochreous, each feather with the centre towards the tip black, and marbled and barred with that colour; rump and upper tail-coverts light rusty red, barred with black; quills dull blackish, on the outer web barred with broad yellowish brown bars finely vermiculated with black, and on the inner web similarly, but more conspicuously, barred, in some the black portion dwindling down to comparatively narrow bands; tail dull rufous yellow, barred and marbled with black; throat white, the rest of the underparts sandy yellow, the feathers on the former portion and on the breast with broad black centres, and indistinctly barred with black, those on the rest of the underparts barred with black, some only having a black centre; feathers covering the legs more rufous than the rest of the underparts and less barred; iris rich orange; beak and claws blackish horn. Total length 26 inches, culmen 2·7, wing 18·6, tail 11·5, tarsus 3·3.

Adult Male. Differs from the female only in being smaller in size; one I have before me from Sweden measures—culmen 2·5, wing 18·0, tail 10·5, tarsus 3·1.

Young emerging from the down plumage (fide *Nilsson*). Beak blackish horn, with the ridge of the maxilla and edges of the mandible whitish; iris saffron yellow; feet pale yellow; toes naked towards the tip, lead-coloured; claws similarly coloured, but horn-brown towards the tips; above the eye a black spot, before it a white one, and behind this a brown patch; throat white; quills blackish marked with grey and rusty yellow; body covered with dense grey down, barred with brown.

Obs. This Owl varies considerably in size, not only according to sex, but also according to locality. The smallest specimen which I possess is a male from Macedonia, which measures only—culmen 2·4, wing 17·8, tail 11·0, tarsus 2·9. In colour this specimen resembles others from Scandinavia, but is darker and rather more rufous in tinge. I have not seen any of the pale variety which is said to inhabit Greece, as other examples from that country which have passed through my hands were quite as dark or darker than northern specimens. The measurements of the specimens I have examined vary as follows:—*Archangel,* three specimens, all sexed as males, but I am inclined to think that they must be females; they measure—culmen 2·7–3·0, wing 18·8–20·0, tail 12·3–13·1, tarsus 2·9–3·7. *Sweden,* two females measure—culmen 2·6 and 2·7, wing 19·0 and 18·6, tail 11·3 and 11·5, tarsus 3·1 and 3·3; and one male—culmen 2·5, wing 18·0, tail 10·5, tarsus 3·1. *Southern France,* one female measures—culmen 2·4, wing 17·5, tail 10·4, tarsus 2·8. *Greece,* one male measures—culmen 2·4, wing 17·8, tail 11·0, tarsus 2·9. *Bulgaria,* one female measures—culmen 2·6, wing 18·2, tail 12·5, tarsus 2·8. *Dobrudscha,* one female measures—culmen 2·5, wing 19·0, tail 12·0, tarsus 3·5; and *Astrachan,* one male measures—culmen 2·2, wing 16·6, tail 10·1, tarsus 2·7.

From the above it will be seen that the specimens from Archangel are the largest in size, that from Astrachan being considerably the smallest. I regret that I have not got the measurements of any of the pale varieties from the Ural; but, speaking from memory, I can safely assert that they do not differ appreciably, if at all, from the ordinary run of European specimens.

In all these specimens the general colour of the plumage is very variable, some approaching slightly the pale eastern form, and others being very dark and rufous. The darkest is the male bird above referred to from Greece; and I may add that the female specimen from Bulgaria is quite as light as most of the northern examples. The lighest-coloured specimens in the series before me are those from Archangel; but they are not so light as the examples of the pale variety, so-called *Bubo sibiricus,* which I examined when on the Continent this last month.

3

This, the largest of our European Owls, inhabits the Northern and Central portion of the Palæarctic region, being but rare in the southern parts.

In Great Britain it is now extremely rare, and some of the specimens obtained were, in all probability, escaped individuals. It is said formerly to have inhabited the Orkneys. Messrs. Baikie and Heddle record one as having been killed in Sandy by Mr. Strang in 1830, and further state that it is occasionally said to be seen in Ramsay, and was then believed to breed in the Hammers of Birsay. Dr. Saxby says that it is now rarely seen in Shetland; and Pennant mentions a specimen killed in Fifeshire in the last century. Mr. Robert Gray gives, on the authority of Mr. Angus, the following notice of its capture in Aberdeenshire:—"Mr. John Wilson, Methlick, has just sent me word that on the 2nd of February, 1866, while out shooting, he saw an Eagle Owl, of which he says, 'it flew very low, keeping close to the ground, rising and falling in beautiful undulations over the uneven surface. I saw it from a considerable distance, and in the grey dawn of the morning thought it was a Heron. I could have easily reached the point to which it was flying; but as I did not want a specimen (Herons being plentiful in this locality), I let it go. Some doubts, however, having occurred to me at this moment, I made a rush upon the bird, and got near enough to discover my mistake. It did not diverge in the least in its flight at my approach; and I might after all have killed it, but trusted to a better opportunity. After this it was often seen about Haddo House, and always in company with a smaller Owl. In the last week of February of the same year an adult female Eagle Owl—no doubt the same bird—found its way to Aberdeen, from Mr. Wilson's neighbourhood. It fell into the hands of a wright, who brought it to me for identification. It weighed seven and three quarter pounds. The stomach contained two water-rats nearly whole. The owner would not dispose of the bird, nor would he put it into the hands of a taxidermist to have it properly stuffed. He gave me the body, and I preserved the sternum and made a full description of the plumage. I afterwards saw the Owl in the hands of the lucky fellow, displayed as a curiosity; and in this he succeeded perfectly, as I was forced to confess I had never seen such a fine bird so thoroughly caricatured.'"

Professor Newton, in the new edition of Yarrell's British Birds, states that it "has been obtained in Kent, Sussex, and Devonshire. One was caught alive so near London as Hampstead; and it is said to have occurred in Suffolk, Norfolk, Oxfordshire, Derbyshire, Yorkshire, and Durham, besides near Swansea, in Wales. It is doubtful if it has ever really occurred in Ireland, the only record being one given by Thompson from Mr. Stewart's catalogue of the Birds of Donegal, to the effect that four paid a visit of two days' duration to Donegal after a great snow-storm from the north."

In Scandinavia it is common. From Norway Mr. Collett records it as "found from the Hvalöarne to within the Polar circle, in the interior as well as on the hilly islands; on the fell-sides it is numerous in the subalpine region, and breeds commonly above the birch-belt. Near Christiania it is met with at all seasons of the year, but is not common. It is very destructive to game." As above stated, it is found very far north; and Pastor Sommerfelt writes that it has once occurred in Ostfinmark, a specimen having been shot at Lebesby in the winter of 1852–53.

In Sweden it is, Nilsson writes, "not uncommon from Skåne into the Polar circle, frequenting

the rugged mountain-districts, and is likewise found on the bare rocky islands on the coasts of Nordland and Finmark." In Finland it is common; and I have seen it in various parts of the country, more especially in the wilder portions towards the east. From Archangel, where it is said to be common, I have several specimens differing in no respect from those sent to me from Sweden; and respecting its range in Russia, I am informed by Mr. Sabanäeff that "it is resident, though rare, in the Governments of Orloff and Voronege, but common in Perm. It occurs on the wooded slopes of the Ural, but not in the open portions of the Government of Shadrinsk." In Southern Russian it is said by Dr. Radde to be common in the steppes, breeding in the holes in the limestone rocks. It is found in Polish Galicia, where it is said to breed not uncommonly. Count Casimir Wodzicki writes that it breeds throughout the Tatra range, where in 1849 a nest was found on the Lissa rock, and in 1848 a pair bred in the Sandicer Mountains, where they hatched out two young ones. One of these a forester caught and tied to a rock, where it was fed by its parents for two months, its fellow nestling, so soon as it could fly, also assisting in obtaining food. In Pomerania it is still found in many localities, and is by no means rare, though, being destructive to game, it has been subjected to considerable persecution. It is, however, said to be less numerous in Northern than in Southern Germany. Borggreve records it as "formerly scattered all over North Germany, but now almost exterminated, and only common in the wild portions of the Westphalian Rhine districts and the mountains of Silesia. Naumann speaks of it as known everywhere in the Hartz and Thuringia; but this is now scarcely the case. Boeck records it from Prussia; Tobias from Oberlausitz; and Holland from Pomerania." It still breeds in Anhalt; and Pastor Pässler writes that it nests regularly in an almost inaccessible mountain-cleft in the Breda valley, and used formerly to breed on the Ramberg, as well as in a wood between the Elbe and the Mulde. I have received eggs almost every year from Westphalia, where it appears to breed regularly. Mr. A. von Homeyer writes that it often breeds on the Hundsrück; and Mr. Leven gets young birds every year from near Trier. This gentleman further writes that, "according to Mr. Steinbrenner, this Owl also occurs near Bingen, Kreuznach, and Stromberg (where a nest was occupied for several years by one pair, in the neighbourhood of which there were very many bones). I myself heard only once the cry of this Owl, in the spring of 1853, near the river Saar."

According to Kjærbölling "it is rare in Denmark, and is only met with now and then. It has, he states, been often shot at Helsingör, Greenaae, and Rosenvold;" and he himself has often seen and heard it in the Thyrsbek forest. "A specimen shot in the Marienberg forest, on Möen, is in Mr. Hage's collection." It occurs in Belgium; and Baron de Selys states that it is resident, and nests in the rocks bordering the Meuse and Ourthe, but is rare in the central portions of Belgium; and de la Fontaine reports it is a resident in the rocky portions of Luxembourg. It is of rare and accidental occurrence in the north of France, but is said by Degland and Gerbe to be "much more abundant in the rocky portions of Isère and Provence, where it breeds." Jaubert and Barthélemy-Lapommeraye record it as found "in Lower Provence, generally in winter, but resident in the mountainous portions."

In Portugal it is, Dr. Rey writes, "common, especially near Cape St. Vincent; and I often found its castings in the rugged precipices between Lagos and Cape St. Vincent." Lord Lilford informs me that "the Eagle Owl is common, and well known in all suitable localities in Spain.

Major Irby sent me a fine adult male alive, which was caught in one of the galleries on the Rock of Gibraltar, and subsequently two young birds taken from a nest in the mountains not far from that place. I frequently heard the cry of this species in the Pyrenees of Aragon in the spring of 1867;" and Mr. Howard Saunders records it as "resident in every mountain-range. I often saw this species in the Gaitanes; and I obtained three young ones from a nest there. It appears to be abundant in the Eastern Pyrenees, and is probably so throughout the whole range. Dr. Companyo, of Perpignan, records having found two young ones nearly full-feathered so early as the month of March; and he also states that the flesh of this species is white, tender, and of an agreeable taste." It is not uncommon in some portions of Switzerland, more especially in the rugged mountain-districts where there is tolerably good cover.

Salvadori records it as found throughout Italy; and in the days of Savi some individuals appear to have taken up their abode on the dome of the cathedral at Florence. According to Doderlein it "is not uncommon in suitable situations throughout Sicily, and has several times been noticed in the immediate neighbourhood of Palermo." Professor Doderlein remarks that Sicilian specimens are of rather smaller dimensions than those from the continent.

Salvadori states that it is not found in Sardinia, but it occurs in most parts of Southern Europe bordering the Mediterranean. Lord Lilford, writing on the ornithology of the Ionian Islands, says:—"I very often heard, and occasionally saw, birds of this species in Epirus and Albania proper, in which provinces it is common, and breeds. One of our party killed a fine specimen near Prevesa, on the Gulf of Arta, in March 1857. I shot a female near Butrinto in February 1858, and was at the death of another near Santa Quaranta shortly afterwards. I was watching a pair of Bonelli's Eagles one day near Butrinto, when an Eagle Owl came flying past me in a much more hurried manner than is its wont, and took refuge in a thorn-bush, about a gunshot from where I stood. He had hardly reached this shelter before a Peregrine Falcon stooped at him, and, just missing him, rose and 'made her point.' I drove the Owl out, and I witnessed a beautiful flight across an open plain of considerable extent—the Falcon making repeated feints, the Owl flying low, and dodging round the scanty thorn-bushes, till he at length reached a hill-side thickly covered with wild olives, amongst which he plunged, and set his pursuer at defiance. The Albanian and Greek specimens of this Owl which I have examined struck me as much lighter-coloured and rather smaller than those from Spain, Sicily, France, Germany, and Norway." Lindermayer writes that in Greece it is "common in the Peloponnesus and Rumelia, but does not appear to occur on the Cyclades, though common on Eubœa;" and Mr. H. Seebohm informs me that it "is found all the year round both in Asia Minor and Greece. It cannot be said to be a common bird; but during the month I spent in the Parnassus I succeeded in obtaining male, female, and egg. The latter proved to be rotten, but not in the least degree discoloured externally. They breed in March in holes in rocks, making little or no nest. My Greek servant, Costa, told me he had never found more than three eggs in one nest."

As previously stated, it is not rare in Southern Germany. Seidensacher obtained specimens at Tüffer, in Styria. Fritsch records it as breeding regularly in Bohemia, nesting in rocks or old ruins. Amongst the places which are regularly occupied by this Owl during the nesting-season he enumerates the following:—Stechovic; the Babafelsen in the Altthiergarten near Frauenberg; the rocks of Karvanice in the Burgholtz district, near Frauenberg; the ruins of

Krkavec; near Tremosnic, the sandstone rocks near Zar, not far from Weisswasser; the Adersbacher rocks; and the Bohemian Alps. The stomach of a specimen killed near Bensen in 1868 was quite full of cockchafers. An official list states that 202 specimens were killed in Bohemia in 1857, which appears almost doubtful, though the total number of Owls of all sorts killed there is in the same list stated to be 8670. The Ritter von Tschusi-Schmidhofen informs me that several pair breed annually in the rocky portions of the Danube valley in Austria; and I met with it in several parts of the Southern Danube. Messrs. Elwes and Buckley record it as "a common species all over Turkey, especially in the woods of Macedonia and on the treeless downs of the Dobrudscha, which it seems to find as well suited to its habits as more sheltered localities. In this part of the country it chooses a bank of earth on the side of a ravine for its eyry, and scratches out a hole for the eggs in the bare ground, sometimes within sight of every passer-by. We found a nest of four hard-set eggs on April 8th, and others containing young birds a fortnight later." Mr. Farman also, to whom I am indebted for a specimen from Bulgaria, records it as "more or less plentiful throughout the country, but particularly so in the Pravidy valley." In Asia Minor it was obtained by Strickland; but I do not find any note of its ever having occurred in Palestine. In Northern Africa it is rare. Von Heuglin records one as having been shot near Abasieh, not far from Cairo, in Egypt, in the winter of 1850–51; so that it may be looked on as a rare winter straggler to North-east Africa. In North-western Africa it has been met with in Algeria, where Mr. Taczanowski saw a fresh-stuffed specimen at Biskra, which agreed precisely with the European form. Mr. A von Homeyer states that he saw a very dark specimen in the Museum at Algiers, obtained in that province; and Loche records it as common in Algeria, especially in the mountains and forests, where it breeds.

To the eastward the Eagle Owl is found throughout Siberia to China, and has been met with in the Himalayas. A variety, which has been described as a separate species under the name of *Bubo sibiricus*, is found in the Ural and in Siberia; but, having examined specimens in the Berlin and other Museums, I have come to the conclusion that it is a mere variety and cannot be looked on as a distinct species. This form is more or less paler in colour than the ordinary run of European specimens, but does not appear to differ otherwise. This race is said to inhabit Siberia; but Von Middendorff obtained specimens at Udskoj-Ostrog in August which agreed precisely with examples from Western Europe. Dr. von Schrenck records it as found throughout the Amoor country, and confirms what Von Middendorff writes respecting the identity of the European and Siberian birds. Dr. Radde obtained three specimens from the highlands of Dauria and the Central Onon, two of which, he writes, form a distinct link between *B. sibiricus* and the common European species, thus showing them to be identical. He further records it as common throughout Southern Siberia. Mr. Swinhoe met with it at Amoy, where, he says, it is occasionally seen in the winter, and nests somewhere in the neighbourhood, as the young are sold in the streets of the town. He also records it from Takoo and Peking; and in Talien Bay, North China, he "twice saw this fine Owl. Once we were on an expedition, when the whole party stopped to see one of this giant species sitting on a rock some way up a hill, and trying to ward off the attacks of a pair of Red-legged Falcons, who were hovering over and darting at him on each side. At last he flew to the other side of the hill to try and take refuge from his small assailants; but they followed after and continued their persecution until he hid himself under a

rock. At another time, when I was clambering over the hills that skirt the harbour between 'Pearl Bay' and 'Odin Bay,' I suddenly turned a corner and came close in view of a very fine specimen, which at once rose respectfully and flapped over the valley out of view. These birds, I presume, banquet off the hares (*Lepus sinensis*) that scantily people the surrounding country."

Major W. E. Hay shot a specimen of the pale variety on the borders of the Pangkong Lake, in Thibet; and Dr. Jerdon writes that it "occurs in the higher region of the Himalayas, but apparently along the snow-line. A specimen was sent to the Museum of the Asiatic Society by Captain Smyth, of Almorah. Blyth, however, informed me that Hodgson's Shikarees, when in Calcutta, recognized *Bubo maximus* as a species which they knew; so it may hereafter demand a place among the birds of India." And he further adds (Ibis, 1871, p. 345), in his additional notes, that it "has been killed several times in the Himalayas, generally at a considerable elevation."

This bird, the most powerful amongst the Owls, is also one of the boldest and most rapacious of the European birds of prey. Naumann states that it will even attack, and has been known to vanquish, the Eagle. Though a nocturnal bird, it is not stupid or dazed when exposed to the glare of the sun, but flies with great ease, threading its way with facility through the dense forest if roused during the daytime, and is shy, difficult of approach, and quite capable of taking care of itself as well during the day as at night. Usually it remains quiet during the day, hidden in some dark ravine or dense forest, but often appears about in search of prey quite early in the evening before the twilight has set in. Its flight, like that of all the Owls, is noiseless and powerful; and its note, a deep and loud hoot, consisting of the syllables *hu hu*, modulated in various ways, can be heard at considerable distances. Uttered at night from some dark, gloomy-looking gorge, the gruff call-note of the Eagle Owl sounds peculiarly weird and wild. It occasionally varies its usual note; so that it may be sometimes likened to a hoarse laugh, and at others it is not much unlike the neighing of a horse. The superstitious peasants in the north believe when they hear the hoot of this Owl that evil spirits are about; and the various legends of the wild huntsman, the so-called 'wilde Jagd,' so firmly believed in by many of the German peasants, doubtless have their origin from this bird. Few birds of prey are so destructive to game as the present species; for there is no game-bird, not even the Capercaillie, which is too large for him, and he does not disdain to hunt after the smaller species also; mice and rats, hares, rabbits, young fawns, black game, pheasants, partridges, and hazel-grouse, all are equally good in his sight, and form a portion of his daily diet when obtainable; but jays, and especially crows, appear to be favourite articles of food with him, and remains of the latter are very frequently met with in his larder. As a cage-bird the Eagle Owl thrives well, and breeds not unfrequently in confinement; indeed Mr. Castang, the game-dealer, is seldom without live specimens which have been hatched and reared in confinement in this country. Professor Newton (Yarr. Brit. Birds, p. 171) says that "it has been known to live to a great age, and has bred in confinement at Arundel Castle and elsewhere. Mr. Edward Fountaine, who has been remarkably successful in his treatment of birds of this family, has for some years kept many Eagle Owls at Easton, near Norwich, the majority having been reared in his aviaries; and as some of them were hatched from eggs laid by birds bred by him, he may be considered to have, in some degree, domesticated the species." Mr. J. H. Gurney informs me that from the original pair referred to by Mr.

Fountaine (Ibis, 1859, p. 273) forty-nine young ones have been reared between 1849 and 1873, they having laid altogether seventy-one good and several bad eggs. Besides this, both Mr. Fountaine and Mr. Gurney reared several grandchildren of the original pair, bred from their young.

The Eagle Owl breeds early in the season, the eggs being usually laid in March or early in April. The nesting-place is usually on a ledge of rock or in a convenient cleft, except in the large forests, where they are said to be equally often in a tree or else on the ground. So far as I know, but little attempt is made to collect materials to form a nest or a bed on which the eggs are placed, but usually these latter are deposited almost on the bare rock or soil, in the latter case a hole being scratched by the bird. Professor Newton, however, states that, according to some authors, the nest is large, the materials collected being spread over a surface of several square feet.

Of the eggs of this Owl I have a fair series in my collection, some obtained by myself in Pomerania, and others sent to me by my friend Mr. Carl Sachse, of Altenkirchen, these latter being from Gerolstein, Trarbach on the Mosel, Höningen on the Ahr, and Luxemburg. In shape they are somewhat variable, some being stumpy oval, others almost round, tapering sharply at each end, or tapering but slightly, and in colour pure white, the shell of almost all of them being somewhat rough in grain. In size they vary from $2\frac{2}{40}$ by $1\frac{35}{40}$ to $2\frac{22}{40}$ by $1\frac{37}{40}$ and $2\frac{14}{40}$ by $2\frac{5}{40}$. The number of eggs deposited is usually two or three; but I know of instances where four have been found in one nest.

The adult birds described, and the one figured, are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀. Upland, Sweden, April. *b*, ♂. Norrköping, Sweden, September. *c*, ♀. Norrköping, August (*Meves*). *d*, *e*, *f*, ♂. Archangel (*Piottuch*). *g*, ♀. Bulgaria, April (*Farman*). *h*, ♂. Olympus, Macedonia, January 19th (*Dr. Krüper*).

E Mus. Baron A. von Hügel.

a, ♀. South of France. *b*, ♀. Dobrudscha, May. *c*, ♂. Astrachan (*Möschler*).

E Mus. Berol.

a, *b*. Ural (var. *sibiricus*).

Genus GLAUCIDIUM.

Strix apud Linnæus, Syst. Nat. i. p. 133 (1766).
Glaucidium, Boie, Isis, 1826, p. 976.
Surnia apud Keyserling & Blasius, Wirbelth. Eur. p. xxxii (1840).
Athene apud G. R. Gray, Gen. of B. i. p. 35 (1845).
Macroptynx apud Kaup, Contrib. Orn. 1852, p. 107.
Noctua apud Stephens in Shaw's Gen. Zool. xiii. pt. 2, p. 63.

The genus *Glaucidium* contains, according to Mr. Sharpe, twenty species, which inhabit the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, one species only being found in the Western Palæarctic Region. These birds are by no means timid or shy; on the contrary, they are fearless, and for their size strong and rapacious, frequently striking birds larger than themselves. They are, as a rule, nocturnal in their habits, hunting after their prey chiefly in the early morning and late in the evening; but they may sometimes be seen about during the daytime. They feed on mice, lemmings, small birds, and large insects, such as moths, grasshoppers, &c. Their call-note is a tolerably loud and clear whistling cry, which may generally be heard in the evening and morning. They nest in hollow trees, not constructing any nest, but placing their small roundish white eggs on the bottom of the hole without any thing under them to form a couch.

Glaucidium passerinum, the type of the genus, has the bill rather large, stout, decurved from the base, lower mandible notched; nostrils small, round, concealed by stiff feathers; facial disk obsolete; head flat without tufts; wings short, broad, the first quill much shorter than the secondaries, the latter long, second shorter than the fifth, the third, fourth, and fifth nearly equal, the fourth longest; tail long, even; feet closely feathered; claws long, slender, curved, acute.



GLAUCIDIUM PASSERINUM.

XV

GLAUCIDIUM PASSERINUM.

(PIGMY OWL.)

Strix passerina, Linn. Syst. Nat. i. p. 133 (1766, descr. orig.).
Glaucidium passerinum, Boie, Isis, 1826, p. 976.
Surnia passerina, Keys. & Blas. Wirb. Europ. p. 32 (1840).
Athene passerina, Gray, Gen. of B. i. p. 35 (1845).
Microptynx passerina, Kaup, Contr. to Orn. 1852, p. 107.
Strix pusilla, Daud. Traité d'Orn. ii. p. 205 (1800, ex Levaill.).
Strix pygmæa, Bechst. Naturg. Deutschl. iv. p. 978, t. xxiv. (1805).
Noctua passerina, Schlegel, Mus. Pays-Bas, *Striges*, p. 41 (1862).
Strix acadica, Temm. Man. d'Orn. i. p. 96 (1820, *nec* Gm.).

Surnie chevêchette, French; *Sperlings Eule*, German; *Sparfuggle*, Swedish; *Spurveugle*, Norwegian; *Dværgugle*, Danish; *Dwerquil*, Dutch; *Gauki*, Tungusian.

G. umbrinum: collo postico maculis fulvescenti-albis longitudinaliter notatis: capite antico et collo laterali punctulis parvis albicantibus irregulariter variatis: collo postico et corpore superiore maculis parvis fulvescentibus maculatis et fasciatis: tectricibus alarum superioribus extus albo distincte notatis: remigibus saturate brunneis albo et rufescenti-brunneo plus minusve distincte fasciatis, pogonio interno albo distinctius transfasciato: cauda brunnea rufo tincta albo anguste fasciata et terminata: facie alba, plumis omnibus brunneo transnotatis: fascia mystacali a mento orta pure alba: gutture et colli lateribus albis brunneo late notatis: jugulo et pectore medio albis: pectoris lateribus brunneo et fulvescenti-albo transfasciatis: pectore summo brunneo notato: corporis lateribus albis striis longitudinalibus brunneis conspicue lineatis: cruribus et dactylis plumiferis albis brunneo notatis: subcaudalibus albis brunneo striatis: subalaribus albis brunneo notatis: rostro flavo: iride læte flava: pedibus brunnescenti-flavis, unguibus nigricanti-brunneis.

General colour umber-brown; lores and feathers round the bill white; no facial disk, but the plumes of the side-face white, varied with brown bars crossing the feathers; fore part of the head and sides of the neck varied with tiny round markings of fulvous white; at the back of the neck a series of longitudinal fulvous white markings forming an irregular band; the crown of the head and nape, as well as on the scapulars and back, marked with small obsolete spots and bars, the latter being more distinct on the lower back and rump; the wing-coverts blotched with white; quills dark brown, slightly tinged with rufous, all the feathers barred with white on the inner web, the outer web marked with white and reddish brown bars, the latter being more indistinct; tail dark brown, also somewhat tinged with rufous, and clearly barred with narrow transverse lines of white, some of these bars being slightly tinged with fulvous; chin and a moustachial stripe, extending slightly backwards on to the side of the neck, below the ear-coverts, white; centre of the throat and sides of the neck, below the before-mentioned moustachial stripe, brown varied with white; lower portion of the throat white; upper part of the breast and sides of the same white, marked with brown, tinged with fulvous on the latter and slightly barred; centre of the breast and abdomen white; flanks and sides of the body generally very pure white, longitudinally streaked with brown, broadening out towards the apex of the feather; under

tail-coverts white, longitudinally streaked with brown; feathers of the leg dirty white, slightly marked with brown; under wing-coverts white, mottled with brown; bill yellow; feet brownish yellow; talons blackish brown; iris bright yellow. Total length 6·5 inches, culmen 0·55, wing 3·9, tail 2·2, tarsus 0·5.

Even at the present day some confusion exists as to the identity of the present species; and it may therefore be as well to state a few of the differences between it and the Little Owl (*Athene noctua*), with which it is frequently confounded. As its trivial names of "Dwarf Owl," "Pigmy Owl," "Sparrow-Owl," &c. denote, the present bird is the smallest of the European *Strigidæ*, and is not more than half the size of *Athene noctua*; moreover it exhibits well-defined generic differences, and has on that account been placed by us in the genus *Glaucidium*. In *Athene noctua* the first quill is about equal to the fifth, reaching not far from the end of the second quill, whereas in *G. passerinum* the first quill is very short, only reaching to about half the length of the second. The small size and distinct dark striping of the flanks will also readily distinguish it.

Its habitat appears to be throughout the whole of the Northern Palæarctic Region, from Norway to the far east of Siberia. It has even been said to have occurred in England; but the evidence on this point seems scarcely satisfactory, as there is apparently some confusion between this species and the American *Nyctale acadica*, also sometimes called the "Sparrow Owl" (*cf.* Milner, Zoologist, 1860, p. 7104).

In Norway it is a common bird, as we learn from Mr. R. Collett, who, in his excellent little work on the 'Ornithology of Christiania,' writes as follows:—

"The Pygmy Owl appears annually in varying numbers, but is, without doubt, as a rule, next to *Strix aluco*, the commonest species in the neighbourhood of Christiania. During the summer it frequents both the non-evergreen and coniferous forests, but throughout the winter is found in the vicinity of habitations. When passing through the Castle-park on an autumn or winter evening its short, sharp note, which resembles the *iss* of the Thrush, may frequently be heard. It is generally answered by another bird in the neighbourhood. It is of a courageous disposition, and seizes its prey, which generally consists of Sparrows or Titmice, on the wing. During the spring it often strikes at decoy birds on the ground, and is thus captured by bird-catchers; in the autumn also it takes birds from snares. It generally hunts in the morning and evening, sitting quietly on a bough during the rest of the day, and is then, on account of its small size, difficult to see. Some seem to migrate in winter. The nest is placed in hollow aspen trees in the spruce-woods or dense thickets; the eggs are four in number, white, and slightly glossy (of a greenish tinge inside), like other Owl's eggs; the length is 12‴–13‴, breadth 10‴."

Respecting its habits in Sweden, we translate the following communication from Mr. C. W. Lundborg to the 'Svenska Jägarförbundets Nya Tidskrift,' 1863, p. 177:—

"This pretty Little Owl, which is generally considered to be rare, occurs rather abundantly in the northern portion of Östergötland, in the large forests. If even the bird itself is not so generally known, the inhabitants of the woods, at least, know its whistling note *hȳ* or *hō*, and call the bird *årpinnen* (the oar rowlock) and *hjulnålen* (the axle-head), as the note resembles the harsh sound of an ungreased axle-head in a wheel. Besides this monotonous note *hȳ*, it has also another note, *hȳ hŏ*, *hŏ*, *hŏ*, the shorter syllables of which can, however, only be

heard when close to the bird. Sometimes, however, it calls *hȳ hȳ hȳ hō*. These notes are generally heard late in the evenings and at early dawn. In the spring, when in the early morning one goes out to shoot Capercailzie, this Owl may be heard sometimes before it is light enough to see. By imitating its call the bird may be decoyed within range; but it flies so silently and settles down on a branch so quietly, that it often comes first to the one side and then to the other before one can see it. As soon as it gets light this bird becomes silent, and is therefore crepuscular. The male in particular can easily be called, and by a practised person it may sometimes be got to follow a couple of thousand yards, or even to the house; thus a forester twice decoyed males to his home, and shot them from his own door.

"In the middle of the summer it is seldom seen, but in the late autumn, when it becomes cold, can be oftener observed. It then comes to dwelling-houses; and a couple of specimens were shot at the buildings of the ironworks of Finspong. It sits on the top of a tree or some other elevated perch, even in the middle of the day, during the full sunshine. Probably it is hunger that makes it so bold that it will sometimes follow Sparrows into the very porch. Otherwise Mice and Lemmings form its food; and I have found remains of Bats in its stomach. It is not at all shy, and one can generally get easily within gunshot; and both this and Tengmalm's Owl have been knocked over with a stick. It is said that it has been taken alive at Stockholm.

"This Owl has not been observed to undertake wanderings in the autumn like several other species (*Strix nyctea, S. nisoria, S. tengmalmi*); nor has it been observed to fly into holes in barns or other buildings, but nests in hollow trees. In May, 1850, a nest was found in a hollow spruce in a wood near Stens Ironworks. The female was caught on her eggs, five in number. These were dull white, and large in proportion to the bird; in length they measured 1·01, width ·78, down to ·97 in length by ·08. In confinement the female was well and lively for a couple of days, would raise its ear-feathers, which measure a quarter of an inch long, ate heartily, but on the third day very quiet, and died on the fourth. Interference with its incubation was probably the cause of its death. I should say that it cannot reproduce before it is more than a year old, as young males shot in March have the testicles scarcely discernible, whereas older birds at the same season have them very large. These young males are somewhat smaller than the old ones, and may be recognized by their brownish colour, which more resembles that of the female, whereas the old males are more ashy blue in colour. During several years I have been here I have seen about 100 birds of this Owl shot, most of them from the woods near Finspong's ironworks."

The following capital account was contributed to Dr. Bree's 'Birds of Europe' by the late Mr. H. C. Wheelwright in a letter dated Gardsjo, March, 1863:—

"I have been in the forest lately, and found out more about this little Owl. It certainly breeds with us, and not sparingly, and I do hope to get you the nest this year. I have a live one now in a cage; and a most amusing pet it is. Although diurnal in its habits, it seems to sit very still until evening and very early morning. As far as I can make out, this is the earliest bird in our forests; for the old poachers who go out before daybreak to shoot the Capercailzie on the perch in the spring say that the first call-note they hear in the wood is this bird. They also say that as soon as they hear this in the spring they reckon it will not be long before the Capercailzie begins to 'lek' or play.

"The note of this little Owl is a whistle,—one long, loud 'whe-e-e,' like blowing into a key—then a number of finer notes, quickly repeated, 'Tiweet, tiweet, tiweet, tiweet,' not so loud. I have never heard it till this spring. One night, early in March, I slept at a woodwatcher's cabin in the forest, and my host came into my room about 5 A.M. and told me to come out and hear it. The bird was in a fir-plantation about eight hundred or a thousand yards from the house; and I distinguished the note very plainly. I stole up quietly and identified the bird. I had often heard the sound before, and always took it for Tengmalm's Owl; so, to make quite sure, I shot it. It must have a large range in Scandinavia; for, as you know, I shot a family of young fliers at Quickiock, and I do not believe that this place is its most southern range, although they have never been found breeding in Scania (nor, for the matter of that, can I learn that any one has really got authentic eggs), and are very rare or only accidental in Denmark.

"They are very bold and voracious for their size; and I have more than once seen them strike down a Titmouse in the forest. Although we know nothing for certain of its breeding-habits, we may take it for granted that it lays more than two eggs, as stated by Temminck; for out of the family I saw at Quickiock I obtained four specimens, and I am not certain but that one escaped."

Naumann has given the following account of the distribution and habits of the Pigmy Owl in Germany:—

"It is a denizen of the colder climes, and but seldom visits our parts. In Poland, Lithuania, and Sweden it appears now and again, but is commoner, indeed almost common, in Russia, and has been also shot in Hungary. In Germany it is everywhere rare. It always frequents woods in the mountains, and particularly those where there is much underbrush. It has been found in the Hartz and Thuringia, as also in the mountains of Silesia, Bohemia, Austria, and Styria. In Silesia it has occurred in the woods in the low country, as for instance in the neighbourhood of Wartenberg and the Trachenberg. As these occurrences have been sometimes in the spring, when the Woodcocks are passing, sometimes in autumn, as also in winter, it may be looked upon as a partial and not a regular migrant. It seems, however, that further investigation will show that it is found in more localities in Germany than has hitherto been supposed; but as it affects lonely, thickly wooded, and mountainous districts, and is generally found in the dense forests, it escapes observation the easier. . . . . Its food consists chiefly of large insects, such as moths, beetles, grasshoppers, &c., which it generally catches in the dusk, as also of small birds and mice. It hunts after its prey by day, but equally so in the gloaming of the mornings and evenings. That it does catch birds during the daytime is proved by the circumstance that one was shot in the middle of the day with a Blue Titmouse in its claws that it had just caught. Before it devours a bird it plucks it carefully, like a Hawk; the mice it tears in pieces suitable for eating. In confinement these little Owls refuse at first to eat during the day, but soon become reconciled. At first they only feed in the evening, though by light. They are fond of small birds, and will soon attack and devour living ones that have been put into their cage."

The late Herr Seidensacher has recorded the following observations:—

"*Strix pygmæa* occurs very sparingly in the neighbourhood of Cilli, and can be known by its note, *du-du-du*, but is still not easily observed. It inhabits, in preference, localities where groups of hollow oak trees are found on the edge of the forest; and on the 16th April this

year I succeeded in finding a nest, with three fresh eggs, in a large hole in the trunk of an oak.

"Two of the eggs are roundish, the third elongated, tapering equally towards each end; they have a rather polished shell, with deep, distinct pores, placed away from each other, are clear white in colour, like those of the Little Owl (*Athene noctua*), without any tinge of brown or yellow, as are most of the eggs of the Scops Owl (*Strix scops*).

"They weighed 2 Quentchen 37, 23, and 37 grains respectively, and when blown 11, $10\frac{3}{4}$, and $10\frac{1}{2}$ grains; and the round eggs measured $31\frac{1}{2}$ and 30 millims. by 26 and 25 millims., whereas the long egg measured 32 by 25 millims. They are smaller and lighter than the smallest eggs of the Scops Owl, as these latter weigh from 2 Quentchen 50 grains to 3 Quentchen 48 grains, and only exceptionally less than 2 Quentchen 50 grains; and the diameter is always either in length or breadth larger than in the eggs of the Least Owl (*Strix passerina*)."

One of the three eggs of the Sparrow-Owl above referred to, in the collection of Mr. Dresser, is now before us, and we cannot add any thing to Seidensacher's careful description. The other two, we believe, are in the collection of Baron von König Warthausen, who procured them from the above-named collector.

Bailly, in his interesting work on the Ornithology of Savoy, has given the following details:—

"It is a very rare bird in Savoy, where it is found only in the highest forests of the Alps, in the pine and fir woods, from which it wanders only to a very little distance, even in winter. The deep forests of Villaremberg and Albiez-le-Jeune, in the province of Maurienne, are tenanted by it all the year; and the poachers who go there in the autumn in pursuit of Thrushes and Blackbirds sometimes kill it in mistake for a Thrush in the gloaming, when it commences to pursue its nocturnal diversions. It is, indeed, not larger than a Blackbird or Redwing, vulgarly called in Savoy *Quilon* or *Quilet*. M. Berthond, an apothecary at Montmeillant, gave me, in July 1849, a specimen of the Sparrow-Owl, which had been sent to him from Rochette. We must suppose, therefore, that the forests of Saint-Hugon and those of the Alps above Rochette also contain this Owl. M. Edmond Fairmaire, of Paris, informed me in 1850 of the capture of three specimens in the Canton of Vallais, in Switzerland, which were sent to him to be prepared." The author then proceeds to say that he knew nothing personally of its breeding-habits, but that the accounts given him by different hunters were to the effect that it nested in little naturally formed holes in rotten fir trees, that the brood consisted of five or six individuals, which were fed by the old birds on mice and grasshoppers, which they hunted for in the underwood, also on Moths and Bats, which they pursued and seized on the wing along the outskirts of woods, in the twilight, and at the time when the Thrushes enter the depths of the forests to seek a refuge for the night.

Lord Lilford also kindly informs us that he knew of a specimen being killed at Lausanne in the winter of 1850–51.

Mr. Howard Saunders has recorded the existence of two supposed specimens in the Museum of Catania, in Sicily; and having been assured by Professor Zucarello-Patti that he had preserved these two out of seven specimens obtained *in the flesh* many years previously, he could certainly have attributed them to no other *European* species. Count Salvadori has since identified them

as examples of *Glaucidium pumilum*, a native of South America, and has suggested that they had been sent over in collections from the Imperial family in Brazil to their relatives in the ex-royal family of Naples. Count Salvadori's statement having been confirmed by Professor Doderlein of Palermo, we therefore disallow the claim of this species to a place in the fauna of Sicily.

Dr. v. Schrenck writes as follows:—

"Our specimen from the Amoor, a female, agrees exactly with a specimen from the neighbourhood of St. Petersburg. It has long been known that this little Owl, though not included by Pallas in the 'Zoographia Rosso-Asiatica,' occurs in Russia in Europe. It is probably also distributed throughout all Siberia, as it was observed in the far east by Middendorff at Udskoi-Ostrog, and myself in the Amoor country. The specimen above referred to I shot in a gloomy fir-wood near the Nikolaieffsk Post, after a fall of snow, on the 23rd of October (4th November), 1854, as it settled on a low branch."

Radde found it in the Ditschum valley (Bureja mountains), but states that he did not observe it anywhere else in Siberia.

The figure in the Plate is drawn from a female specimen obtained at Norrköping, in the winter of 1864, by Mr. Meves; and the description is taken from the same example. There seems to be but little difference in the sexes, the male being slightly smaller and rather greyer in plumage.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, b. Norrköping (*Meves*). *c.* Malmö (*T. E. Buckley*).

E Mus. Lord Lilford.

a. ♂. Sweden, October 6th, 1865 (*H. Wheelwright*).

Genus ATHENE.

Strix apud Scopoli, Ann. I. Hist. Nat. p. 22 (1769).
Noctua apud Savigny, Syst. Ois. de l'Egypte, p. 45 (1810).
Athene, Boie, Isis, 1822, p. 549.
Carine apud Kaup, Natürl. Syst. p. 29 (1829).
Surina apud Bonaparte, Oss. Regn. Anim. p. 48 (1830).

Six species, which inhabit the Palæarctic, Ethiopian, and Oriental Regions, are ranged under this genus, two of them being found in the Western Palæarctic Region. They are nocturnal in their habits, and when seen about by day appear to be stupid and dazed by the light; and if then observed by small non-rapacious birds they are mobbed like other nocturnal Owls. They frequent ruins, inhabited places, groves, gardens, &c., and feed on small birds and mammals, reptiles, snails, slugs, and insects of various kinds, and are much prized by gardeners on account of the good they do by destroying noxious insects, reptiles, mice, &c. They are said also to catch maybugs on the wing with great dexterity. Their note consists of a dull smothered call uttered whilst they are on the wing or seated. They nest in ruins, holes in rocks, hollow trees, &c., not making any nest, but placing their roundish white eggs on the rubbish which accumulates at the bottom of the hole.

Athene noctua, the type of the genus, has the bill decurved from the base, the cere short and swollen, the nostrils oval, concealed by stiff bristles, lower mandible sinuated; facial disk ill defined; auditory conch large, the orifice small and without operculum; head large, without ear-tufts; wings large, broad, the first quill about equal to the sixth, the third longest; tail moderate, square; legs long, covered with short feathers to the base of the toes, which are covered with hairs; claws strong, curved, acute.



ATHENE xxx NOCTUA.

ATHENE NOCTUA.

(LITTLE OWL.)

Strix noctua, Retz. Faun. Suec. p. 85 (1800).
Strix nudipes, Nilss. Orn. Suec. i. p. 68 (1817).
Strix psilodactyla, Nilss. Skand. Faun. 1st ed. p. 88 (1824).
Surnia noctua, Bonap. Osserv. Regn. Anim. del Bar. Cuvier, p. 48 (1830).
Syrnia psilodactyla, Macgill. Brit. B. iii. p. 417 (1840).

Little Owl, English; *Chouette chevêche*, French; *Steenuil*, Dutch; *Kvikeugle*, *Steenugle*, Danish; *Sirinn Domovoï*, Russian; *Mochuelo*, *Cu-cu*, Spanish; *Civetta*, Italian; *Môcho*, Portuguese; *Cucca*, Sicilian.

♂ griseo-brunnescens, vix fulvescente tinctus: capite maculis aut lineis albis longitudinaliter striato: collo postico albo transversim fasciato: dorso toto fasciis celatis albis transfasciato: tectricibus alarum dorso concoloribus et eodem modo albo marmoratis: remigibus brunneis, fulvescenti-albo transfasciatis: caudâ fulvescenti-brunneâ, rufescente transfasciatâ: facie albidâ, nigricanti-brunneo lineatâ: loris et supercilio albis: colli lateribus et gutture imo brunneo et albo variis: gulâ albâ: subtùs albus, paullò fulvescente lavatus, brunneo irregulariter striatus: cruribus fulvescenti-albis: subalaribus et subcaudalibus fulvescenti-albis, paullò brunneo variis: rostro flavo, virescente tincto: pedibus cinerascenti-flavis: iride flavâ.

♀ paullò major, et fulvescenti-brunnea.

Pull. fulvescenti-brunneus, maculis rotundatis albidis marmoratus: pileo angustè albido striolato.

Adult Male. Above greyish brown, the head irregularly striped with white and tinged with fulvous; back of the neck, back, and scapulars irregularly mottled with white, owing to the half-concealed white spots on the feathers; rump similarly coloured, but slightly tinged with fulvous; wing-coverts coloured like the back, but more distinctly marked with round white spots; quills brownish, transversely banded with fulvous white, the outer edges of the feathers spotted more or less distinctly with white; tail brown, slightly inclining to rufescent, barred transversely with fulvous white; no facial disk; forehead and eyebrow, as well as the malar region and the throat, white; feathers in front of the eye long and developed into bristles, very lax, and of a black colour; cheeks whitish, streaked with blackish; sides of the neck and lower part of the throat brown, minutely mottled with white like the back; upper part of the breast white, forming a band across the chest; rest of under surface of the body white, streaked and mottled with dark brown; lower part of the belly, thighs, and under tail-coverts fulvous white; under wing-coverts white, mottled with dark brown; bill yellow, slightly tinged with greenish; feet greyish yellow; iris yellow. Total length 8·2 inches, culm. 0·65, wing 6·0, tail 2·9, tarsus 1·1.

Adult Female. A little larger than the male, inclining to fulvous brown but never so dark as in the latter. Total length 9 inches, culm. 0·75, wing 6·1, tail 3·0, tarsus 1·1.

Young. Dull fulvous brown, all the peculiarities of the adult being distinctly indicated, the whole plumage somewhat washed with rufous.

The Little Owl is distributed over the whole of Continental Europe, with the exception of the northern portion, which it seldom or never visits. Along the southern countries of the Mediterranean basin it is replaced by a closely allied species, *Athene meridionalis*; and the eastern boundaries of the two birds have as yet not been satisfactorily defined. In England it has several times occurred, but never in Scotland and Ireland. It has been said to have bred once in Norfolk, as stated by Hunt; but Mr. Stevenson only knew of two instances of its occurrence in that county from his own personal observation; and Mr. A. G. More passes over the above record in silence, possibly through the want of a better verification of the circumstance.

Mr. Stevenson has lately written us a note as follows:—

"For the specimens recorded from Norfolk I must refer you to my 'Birds of Norfolk;' but I may tell you that Baker, the birdstuffer at Cambridge, told me some time since that he had stuffed a Little Owl for a gentleman some four years ago, which had been shot near Lynn. I do not doubt him, but have never seen the specimen. Beware of a note in 'Land and Water' a short time back, about a Little Owl shot near Yarmouth. The bird was killed from the rigging of a vessel off the Dutch coast; another was caught at the same time and brought alive to Yarmouth, where it escaped from its cage, and will no doubt turn up yet as a genuine British-killed bird." Mr. F. Bond tells us he has a specimen shot near Sevenoaks, Kent, in May 1862.

All over France it is common and resident, according to Degland and Gerbe. Bailly says:—"The Little Owl is common in Savoy, and is sedentary. It is more abundant on the plains than in the mountains, where, in some places, it is replaced by Tengmalm's Owl." In Belgium and Luxembourg, as recorded by De Selys-Longchamps and De la Fontaine, as also in Holland, it is abundant; and in Germany, Dr. Borggreve says, it is resident everywhere, commoner in the west than in the east.

Kjærbölling observes:—"In Jutland and Fyen it is numerous in the towns and country-churches, more seldom met with in the farm-houses and woods; it is both a partial migrant and resident." Mr. Wolley's collection contained eggs taken in a church-steeple at Tetsmark, Jutland, by Herr J. C. H. Fischer, on the 14th of May, 1858. It does not seem to have ever been killed in Norway; and Nilsson says it has "only once occurred in Sweden, one having been captured in Lomma church, near the coast of the Sound, having probably straggled over from Denmark." In Finland it does not seem to have yet been obtained.

In Styria, Seidensacher writes, it "nests with us, but is rare. In April 1862, I found a pair breeding in a hollow oak near the village of Arndorf, and procured the two eggs. The female was caught on the nest."

Count Salvadori says it is the most common species of Owl found in Italy where it remains all the year round; and, according to Professor Doderlein, it is resident in Sicily throughout the year, and is very abundant. In November a partial migration takes place, those which had inhabited the higher grounds then descending into the warmer regions.

Major Irby writes from Gibraltar:—"Resident and breeding. Observed on the Rock of Gibraltar."

Mr. Saunders sends us the following note:—

"Common and resident throughout Spain, though I never saw a specimen of *Athene meridionalis* even in Andalucia. I may observe that the females are generally more russet on

the back than the males, and the young birds are frequently so russet that it would be easy to confuse them at a first glance with the North-African species." It occurs in Portugal. Lord Lilford has also observed it in Minorca.

The same nobleman, in his paper on Birds observed in the Ionian Islands, says:—"I believe this species to be a summer visitor to Epirus. We found it nesting in the ruins of Nicopolis in March 1857, and at Santa Quaranta in May. It is rare in Corfu."

Lindermayer states:—

"According to my experience it is numerous all over Greece, even on the Cyclades, where Erhardt found it at all seasons. Wherever it is found it is a resident, and loves the towns which have been inhabited by Turks, as, for instance, Kalkis, on the island of Eubœa, Lamia, Mistra, Athens, &c., probably because the ruins of Turkish buildings afford more shelter than the plain stone walls of the Greek houses, and because in these ruins they are less disturbed than elsewhere."

Mr. Strickland gives it as common in the Levant, adding that the Smyrna specimens were examined by the late Prince Bonaparte, and were found to be true *A. noctua*.

Mr. H. J. Elwes writes:—"I found this the commonest Owl in Turkey, where nearly all the churches and ruins are tenanted by a pair." Mr. Robson, in a note given below, confirms the statements of the above-mentioned authors as regards its abundance in Turkey and Asia Minor.

Von Nordmann observes as follows:—

"Very common in all parts of New Russia throughout the year. It nests in clefts in the rocks and under stoneheaps in the town of Odessa. It hunts after prey during the daytime. It is equally common in Bessarabia and the Crimea." Mr. Elwes also writes:—"In the Crimea I saw them frequently in the ravines and quarries near Sevastopol."

Dr. Radde obtained a specimen on the rocky shores of the Onon, in Eastern Siberia; and this we imagine to be the furthest eastern range recorded for the present bird that can be depended upon. We believe that the geographical distribution of *Athene noctua*, as detailed by us, can be thoroughly relied on. The corresponding ranges of *Athene meridionalis*, and the points where the two species inosculate, will require careful investigation on the part of future observers.

We are indebted to Mr. J. G. Keulemans for the following account of its habits:—

"The Little Owl is very abundant all over Holland, especially in those localities where meadows with large bushes are found. In such places one sees extensive farm-yards, which generally have an orchard at their back. These the Little Owl appears to frequent by preference, and seldom do such spots remain untenanted by these small birds of prey. I have often seen as many as six within an hour at different spots, so common are they. They are more often seen about the hour of twilight during the months of September, October, and November, when migrating birds visit the country. They are frequently observed to fly long distances in the open fields in the daytime, rarely, however, without being pursued by a swarm of clamorous Starlings, House-sparrows, or even Crows and Magpies. Swallows also exhibit great aversion to this Owl; for no sooner do they spy one than a multitude assemble and fly round about it, chasing it from one spot to another.

"In Holland the bird is universally well known, and from its occurrence in many districts

has received different common names, such as *Steen-uil* (Stone-Owl), *Kat-uil* (Cat Owl), *Boom-uil* (Tree-Owl), and others.

"The male is smaller and more distinctly spotted, and generally of a darker colour, than the female; the sexes may easily be distinguished in life by careful observation. I have skinned many a one, and always found the females larger, especially as regards the bill; the head is also a little flatter, and the whole bearing of the bird more bold and intrusive. All the females of this species are very plucky, while the males are much more shy and retiring. I never used a male bird as a decoy for catching small birds, because it will not sit quietly on its perch, but always tries to hide somewhere. Females, also, will occasionally utter their barking note and attract birds to their vicinity, whereas the voice of the male is seldom heard, at least when in captivity. They do not seem to drink much, as I have had them in a cage for more than a year without giving them any water. Indeed it is a curious fact that when they get wet, either by heavy rain or by being placed in a damp spot, they have fits and remain insensible for hours, and sometimes it causes their death. I had one once which I had placed on a boat near the bank while I was catching birds. The Owl saw its image reflected in the water and jumped in; and although I took it out immediately it was quite insensible, and to all appearance dead. Much regretting its loss, I put it into my pocket and carried it about for two hours, and on reaching home threw it down in a corner of the room. Hearing a noise in the house in the middle of the night, I went down, and to my great delight found my Owl jumping about on the table. I have always used the Little Owl as a decoy for catching the smaller kinds of singing-birds with great success; and by placing him in an exposed place with plenty of limed twigs round, I have sometimes caught as many as sixty birds in one day."

Count Salvadori also informs us that "it is very much used in Central Italy by sportsmen as a decoy for Larks, which it attracts within range of the gun, or for small song-birds, which congregate in numbers to witness its grotesque attitudes and to hear its mimicry; thus they are easily snared on limed twigs. For this purpose the Owls undergo a special training."

Lord Lilford has kindly sent us the accompanying observations:—

"The Little Owl is tolerably common in many parts of Spain; and I have seen it in Piedmont, Sicily, Epirus, and Corfu, but never in such abundance as in the island of Sardinia, where on one occasion, having fired both barrels at a covey of Partridges (*Caccabis petrosa*), at least a dozen of these Little Owls suddenly appeared from among some large boulder-stones; and each taking up a position on a rock or bush within a short distance, went through a series of bows and contortions which were irresistibly absurd. This happened near Pula, in the southern division of the island. I found it common in Minorca, in October 1856, haunting stony ravines near the sea."

Mr. Robson's notes are as follows:—

"This little Owl is very numerous in Turkey in Europe and Asia Minor, and is, indeed, the most numerous of the Owl tribe found here. It breeds frequently in the midst of populated towns and villages, and also in holes where pieces of wood are detached from the sides of houses, between the clay inner lining of walls and the thin outer deal frontage. It also builds in the holes of deserted well-shafts, and it is found in nearly every homestead, large building, or old ruin throughout the country; it likewise nests in clefts of rock and holes of trees, but seems most

partial to large farm-buildings. It is oft-times seen in the country, in the daytime, perched on the top of some building, but it generally flies abroad early in the evening before sunset; it is also out in the morning long after daylight; but in dull days it prefers sitting in front of its retreat, where it may be seen frequently opening and closing its eyes. It is a bird of quick flight, darting off to short distances like an arrow and alighting. It feeds much on the ground, principally subsisting on beetles; and in the middle of June, when it has young, it goes abroad early in the afternoon when the sun is in full glare to seek for food, which it brings quickly to its offspring. As soon as the young are fledged and ready to go abroad, the old birds leave the nest early in the evening, fly to a distance, perch on a housetop or some other post of vantage, and commence a loud and oft-repeated chickering, night after night, until the young birds are induced to leave the nest and take their first flight. Soon after, they are conducted to the mountains to learn to shift for themselves, whence they return for a short time and then leave for ever their paternal home. The chickering of the old birds much resembles the note of the Blackbird when suddenly disturbed, but is louder and more often repeated.

"The Little Owls are not so active by day as by night, the strong light of the sun evidently affecting their vision. In spring-time their note may be frequently heard during the night from the tops of houses. Wakeful and timorous people regard the cry with superstitious fear, whereas it is probably no more than the outpouring of a loyal and devoted love, indicative of connubial felicity, and harmless as the cooing of the Dove. The note sounds much like the clucking of a hen with chicks, louder, but not so prolonged. The sexes are nearly of a size.

"Many of these birds depart during the winter and return in the spring, while some remain the whole year. Many pairs breed in the village of Ortakeuy, and one pair has occupied the same nesting-place for six successive years to my certain knowledge."

Naumann's account of its habits is as follows:—

"Its aversion to daylight makes it, during the daytime, a heavy, stupid bird; and when driven out of its hiding-place it flutters anxiously to the nearest place where it can seek refuge and again hide. In the evening, however, it is quite another bird, passes rapidly and noiselessly through the air, flying restlessly hither and thither, joyfully uttering its varied and not disagreeable note. Now it uses, when on the wing or seated, a smothered, dull call, *quew*, *quew*, or *quiw*, or a loud, clear *quiutt*, or *kuwith*, *kuith*. It also often, and particularly in the spring, utters a deep-drawn note resembling *kuük*, like the note of the Long-eared or Tengmalm's Owl. These notes are often variously modulated by the bird itself or the action of the air, and are supposed by the superstitious peasants to form connected sentences, as, for instance, '*Komm-mit komm-mit auf den Kirchof-hof-hof* (Come with me, come with me, to the churchyard-yard-yard);' and the bird is looked on by them as a prophet foretelling death."

De la Fontaine says that in Luxembourg "the Little Owl inhabits the skirts of the woods, orchards, rocks covered with bushes and surrounded by trees, old buildings, churches, and towers. It sometimes comes to inhabited houses, particularly in the autumn, and sits on the roofs, whence it utters its melancholy cry.

"Its nest, in which the female deposits four or five eggs, is in rocks, hollow trees, and old walls. It feeds on small birds, mice, and other small rodents, moths, maybugs, &c. It is sedentary, common, and undoubtedly a most useful bird."

That excellent observer of nature, the late Mr. Charles Waterton, in the second series of his 'Essays on Natural History,' has written an article on the "Civetta, or Little Italian Owl," from which we extract the following:—

"This diminutive rover of the night is much prized by the gardeners of Italy for its uncommon ability in destroying insects, snails, slugs, reptiles, and mice. There is scarcely an outhouse in the gardens and vineyards of that country which is not tenanted by the Civetta. It is often brought up tame from the nest, and in the month of September is sold for a dollar to sportsmen, who take it with them in their excursions through the country to look for Larks and other small birds. Perched on the top of a pole it attracts their notice and draws them within the fatal range of gunshot by its most singular gestures; for, standing bolt upright, it curtsies incessantly, with its head somewhat inclined forwards, while it keeps its eyes fixed on the approaching object. This odd movement is peculiar to the Civetta alone; by it the birds of the neighbourhood are decoyed to their destruction; hence its value to the ranging sportsman. Often and anon, as the inhabitants of Rome pass through the bird-market at the Pantheon, they stop, and look, and laugh at this pretty little captive Owl whilst it is performing its ridiculous gesticulations.

"Its flesh is relished by the natives of Italy. You may see the Civetta, plucked and ready trussed for the spit, at the same stall where Hawks, Crows, Jackdaws, Jays, Magpies, Hedgehogs, Frogs, Snails, and Buzzards are offered for sale to the passing cognoscenti who frequent the bird-market in quest of carnal delicacies. The inhabitants of this country are apparently blessed with stomachs as keen and strong as that of my old black friend Daddy Quasshi, who could fatten on the grubs of hornets and on stinking fish. Indeed it would appear from what I have seen, that scarcely any thing that has life in it comes amiss to the Italians in the way of food, except the Hanoverian Rat; for I could often see this voracious and needy intruder lying dead in the streets and trodden under foot.

"Thinking that the Civetta would be peculiarly useful to the British horticulturist, not, by the way, in his kitchen, but in his kitchen-garden, I determined to import a dozen of these birds into our own country. And still, said I to myself, the world will say it was a strange whim in me to have brought Owls all the way from Italy to England, seeing that Owls, aye, and Hawks too, are by no means scarce in our palaces, and in parliament, and on the magisterial benches. Be this as it may, I agreed with a bird-vendor in the market at the Pantheon for a dozen young Civettas; and, having provided a commodious cage for the journey, we left the eternal city on the 20th of July, 1842, for the land that gave me birth. . . . . All went well till we reached Aix-la-Chapelle. Here an act of rashness on my part caused a serious diminution in the family. A long journey, and wet weather, had soiled the plumage of the Little Owls; and I deemed it necessary that they, as well as their master, should have the benefit of a warm bath. Five of them died of cold the same night; a sixth got its thigh broke, I don't know how; and a seventh breathed its last, without any symptoms of indisposition, about a fortnight after we had arrived at Walton Hall. The remaining five have surmounted all casualties, having been well taken care of for eight months. On the 10th of May, in the year of our Lord 1843, there being abundance of snails, slugs, and beetles on the ground, I released them from their long confinement. Just opposite to the flower-garden there is a dense plantation of spruce fir-trees. Under these, at intervals, by way of greater security, I placed the separated parts of two dozen newly killed

rabbits, as a temporary supply of food; and at 7 o'clock in the evening, the weather being serene and warm, I opened the door of the cage. The five Owls stepped out to try their fortunes in this wicked world. As they retired into the adjacent thicket, I bade them be of good heart; and although the whole world was now open to them 'where to choose their place of residence,' I said, if they would stop in my park, I would be glad of their company, and would always be a friend and benefactor to them."

The present species commences to hunt after food as soon as the daylight disappears, and will often continue throughout the whole day. It feeds chiefly on mice, but it often surprises small birds on their roosting-perches, or catches bats. Naumann states that it preys also on beetles. It often visits snares that have been placed to catch small birds, and takes possession of any that may have been caught.

Herr von Homeyer writes to us as follows:—

"This Owl is half diurnal, and much more so than naturalists have considered it to be. I have seen it at midday, when the sun was shining brightly, pounce down amongst a flock of Sparrows (*Passer domesticus*) and carry one off to its young. It also catches maybugs (*Melolontha vulgaris*) on the wing with great dexterity."

We are informed by Mr. Keulemans that the Little Owl feeds its young on caterpillars, moths, beetles, young birds, mice, and sometimes frogs. He has found the remains of frogs in the nest-hole where four young ones were hatched.

As regards its note, Mr. Howard Saunders writes to us as follows:—

"Although from its note this species, as well as *Ephialtes scops*, is often called '*Cu-cu*' in Spain, yet the two can easily be distinguished. The former dwells on each syllable, repeating them at regular intervals by the hour together, whilst the latter utters them sharply and almost together. *Athene noctua* also mews like a cat; and one night when lying out in the Coto del Rey, miles from any habitation, I had yet some difficulty in persuading myself that the noise did not proceed from feline lungs; but the bird was obliging enough to pass close over my head, and so settle the question."

Mr. Elwes says, "Early in the afternoon they come out and make a curious squeaking noise, as they sit on the roof of a house. The flight is slow and very undulating, with heavy flaps of the wing, like that of a Woodpecker."

Dr. Lindermayer observes, "Their mournful call may be heard deep into the night, and may be best expressed by its Greek name *Koukouwai*.

"This bird is the one that is represented as sitting by the Goddess Minerva, and has, since the foundation of New Athens, been included in the arms of the town. In the Munich Museum there is a specimen which was presented to the young King Otto, on his first arrival at Athens, by the citizens as a token."

The following account of its nesting-habits was contributed to Mr. Hewitson's work on British Birds' eggs by the late Mr. Hoy:—

"The Little Owl is, like the rest of the family, an early breeder. It not unfrequently makes its nest in the holes of trees; old ruins, however, and the towers of churches are its favourite resort. It appears to be of a quarrelsome disposition, two pairs being rarely met with as near neighbours during the breeding-season. The eggs are usually four, sometimes five, in

number, and vary a little in size as well as contour. The Little Owl makes no nest, although an accumulation of rubbish arising from its castings may be frequently found in the hole, which is often made use of for a long time previously to incubation."

Mr. Keulemans further writes to us:—

"The Little Owl breeds at the end of May, in the hole of a tree or between the fissures or cavities of walls in old houses or ruins. In other countries they are known to breed in slits of rocks; but in Holland they never do so, as there are no rocks in that country. The eggs are from three to five in number, of a glossy white, and a little rounded; there is only one brood in the year. The young ones are covered with a greyish white down, and are blind till the seventh day; the iris in the young individuals is quite as bright as in the old ones; if the iris appears more or less dark, this should not be attributed to the age, but to the sex of the bird, the males always having them of a darker yellow than the females. In the first plumage the young birds are less distinctly spotted, more rufous, and the feathers softer. Old individuals, especially females, sometimes turn lighter; but in this case the spots remain distinct, which is not the case in the young birds."

Mr. W. Bridger thus describes the nesting and habits of the present bird near Valkenswaard, in Holland:—

"This Owl is by no means rare there; a nest with one egg in was taken before my arrival. The doctor of Leende, a village about four miles from Valkenswaard, whose name I do not recollect, kindly allowed a nest of three eggs to be taken from a hole in a walnut-tree in his garden; he told me he was only too glad to get rid of them; for the noise they made at night was abominable. The eggs were taken on the 19th of June, and had been sat upon some time. Two broods were, to my knowledge, hatched out in the village—one from a walnut-tree in a garden, and the other from a hole in a church; I heard of the latter on my return from the Loo, where I had been to see the hawking. I was desirous of obtaining one or two young ones; but as the hole was at a considerable elevation, and extended a long way in, the only way to get them, as Bots said, was to 'lime them.' We tried with two live young birds one evening; but either we arrived too late, or the young birds were not a delicacy; for we did not succeed. However, on the 19th of June, a live mouse having with difficulty been obtained, we commenced operations. Having noticed that the Owls generally perched in the early part of the evening on an iron cross on the roof at the end of the church, we stuck a short stick with the mouse attached by a string to it in the ground opposite; at the side was stuck a twig whose three thin branches, which were limed, spread over the mouse at a height of two or three inches. This being arranged to our satisfaction, we lay at a little distance off, smoking our pipes and watching the result. I had just bet Bots a bottle of his best that we should be again disappointed, when we observed an Owl alight on the cross; presently down he darted in the direction of the mouse. "He's caught!" was the exclamation; and so it was, the Owl was caught and the bottle lost. Poor little fellow! he looked so patient, and seemed to implore so with his large upraised eyes, that we almost felt sorry that he was caught. Another one was captured in the same manner about a fortnight later; and both these are now in the Zoological Gardens. I fed them on birds, which they chiefly contributed to catch, thus:—In a field in which the herbage was short, to allow of the Owl being seen, we would fix a low perch in the ground and tie the Owl to it, allowing him,

however, by means of jesses and a long leash, plenty of scope. In front of the perch, at a little distance from each other, were stuck two sticks in the ground, each having a slit at the top. In this slit and in each side of each stick we lightly fixed a small twig with a slender branch or two projecting, which were limed. The birds, on coming to mob the Owl, would alight on these twigs, which, falling to the ground with their weight, entangled them in the lime, and thus they were caught. In this way we captured Red-backed Shrikes, Yellow Ammers, Tree-Pipits, Whitethroats, &c. It is with the Little Owl that the falconers capture the Great Grey Shrike, which, in its turn, is used by them in capturing the Falcons. The livelier the Owl, the better it is to capture small birds with, as from its hopping and flying about it is the easier seen. As soon as the evening began to close in, and sometimes of a morning, we would see the Little Owl on the move; and in the middle of the day he might often have been seen quietly seated in some dark cranny or other outside the church. In the nights in July, when every thing else was still, I would lie awake, with my window open, listening to their '*koowit, kwitch*,' accompanied only by the watchman's rattle and his monotonous voice as he went his rounds. During the time I had them caged, they never plucked their birds before they eat them; and if you approached to look at them, they would stand up, stare at you, and snap their bills. The Little Owl makes no regular nest, and lays from three to five eggs; some I have are round, and some rather oval; but they are all of the same size, and are of a dull white colour."

Pastor L. Brehm (J. f. O. 1855, p. 501) states that the male shares with the female the labour of feeding the young, and gives the following anecdote:—"One of my watchful ornithological friends brought me from a place about two to three hours' walk from here an old female Little Owl, which he had shot in a fir plantation, and stated that the male was there, but that he could not find the nest. In the evening I went there to look for the nest and shoot the male bird if possible, as these Owls do not breed here, and one must go to the Saulthal (which is from four to six hours' journey distant) to find their breeding-places, and the one I now relate is the only instance I know of their nesting in our fir woods. We searched long for the nest, but could find no suitable place where it was likely to have been. At last I saw a rabbit-hole, and recollected that foreign species of *Athene*, for instance, *Athene cunicularia* in America, nest in the ground. We also saw droppings about the entrance, which confirmed my suspicions that the nest was in this rabbit-hole. All our endeavours that evening to procure the male were fruitless. It often called, but flew so high and settled on the tops of the highest trees, continually calling to warn its young, that I could not shoot it. My companion went back the next day, and to his astonishment saw three young birds sitting at the entrance of the rabbit-hole; but they retreated inside immediately he approached. In the evening he shot the male, and the next forenoon caught the young ones."

Mr. Gurney's account of the nidification of the Little Owl in captivity is as follows:—

"A pair of Little Owls, which I had in confinement, nested this spring in a small covered box, which was placed in the corner of their cage. They laid four eggs about the middle of the month of May, two of which they soon broke, but hatched the other two early in June. The two young ones did not long survive; how they disappeared I am unable to say, and am almost disposed to think the old birds must have devoured them. I regret, owing to the nest being placed in a covered box, I was unable correctly to ascertain the period of incubation."

We have eggs of this Owl, out of Dresser's collection, collected by the late Mr. W. Bridger near Valkenswaard, in Holland, now before us. In size they vary from $1\frac{13}{40}$ by $1\frac{5}{40}$ inch to $1\frac{15}{40}$ by $1\frac{7}{40}$ inch, are roundish oval in shape, and pure white in colour.

There can be no doubt that the present species has often been confounded with the Pigmy Owl, and *vice versâ*; hence it is impossible accurately to discriminate between the rightful synonyms which belong to these two species of Owls. We trust that the descriptions and figures now given will lead to their proper identification in future; meanwhile we have not thought it well to refer to all the synonyms which are supposed to belong to the present bird, as we do not feel positively certain respecting some of them.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Barcelona, February 2, 1866 (*H. E. D.*). *b*. Turkey (*Robson*). *c*. Southern France (*Fairmaire*).

E Mus. Salvin and Godman.

a. Macedonia, February 20, 1869 (*H. J. Elwes*). *b. juv*. Holland (*Baker*).

E Mus. Howard Saunders.

a. Seville (*H. S.*). *b, c*. Cordova, February 1870 (*H. S.*).



J. G. Keulemans. lith

M & N Hanhart imp

SOUTHERN LITTLE OWL.
ATHENE GLAUX.

ATHENE GLAUX.

(SOUTHERN LITTLE OWL.)

Strix noctua, Forsk. Descrip. Anim. Aves, p. 8, no. 2 (1775, nec Scop.).
Strix passerina, Sonnini, Voy. en Egypte, i. p. 349 (1799, nec Linn.).
Noctua glaux, Savigny, Syst. Ois. de l'Egypte et de la Syrie, p. 45 (1810).
Strix persica, Vieill. Nouv. Dict. vii. p. 26 (1817).
Noctua meridionalis, Risso, Hist. Nat. Eur. Mérid. iii. p. 32 (1826).
Noctua meridionalis (Risso), Less. Man. d'Orn. i. p. 110 (1828).
Noctua passerina, Rüpp. Neue Wirbelth. p. 45 (1835, nec Linn.).
Strix noctua meridionalis, Schlegel, Revue Crit. p. 15 (1844).
Strix numida, Levaill. jun. Expéd. Scient. dans l'Algér. pl. 4 (1844).
Athene bactrianus, Hutton, Journ. As. Soc. Beng. xvi. p. 776 (1847).
Athene indigena, A. E. Brehm, Journ. für Orn. 1853, p. 77.
Athene persica (Vieill.), Bp. Rev. et Mag. de Zool. 1854, p. 543.
Noctua veterum meridionalis, Schl. Mus. Pays-Bas, Striges, p. 29 (1862).
Strix nilotica, Pr. Würt., fide Loche, Expl. Scient. de l'Alg. Ois. i. p. 106 (1867).
Strix pharaonis, v. Müll., fide Loche, tom. cit. p. 106 (1867).
Noctua persica (Vieill.), Degl. & Gerbe, Orn. Eur. i. p. 123 (1867).
Noctua veterum, Heugl. Orn. Nordost-Afr. i. p. 118 (1869).
Athene glaux (Savig.), G. R. Gray, Hand-l. of B. i. p. 39 (1869).
Carine meridionalis (Risso), Shelley, B. of Egypt, p. 177 (1872).
Carine glaux (Savig.), Irby, B. of Gibr. p. 58 (1875).
Carine bactriana (Hutton), Sharpe, Ibis, 1875, p. 258.

Figuræ notabiles.

Levaill. jun. *l. c.*; Schlegel & Susem. Vög. Eur. taf. 47. fig. 3; Fritsch, Vög. Eur. taf. 13. fig. 7.

Ad. Athenæ noctuæ similis sed ubique coloribus pallidioribus, rufescenti-arenaceus nec fuscus.

Adult Female (Benisouf). Differs from *Athene noctua* only in having the brown coloration of the upper parts much paler, and of a sandy rufous tinge, the brown markings on the underparts also being much paler and more rufescent; soft parts as in *Athene noctua*. Total length about 8·25 inches, culmen 0·75, wing 6·1, tail 3·1, tarsus 1·25.

Adult Male. Resembles the female, but is rather smaller in size.

The present bird can scarcely be considered as belonging to a very distinct species, being rather a desert or pale form of the common European Little Owl, having, however, a distinct range; and though very closely allied to *Athene noctua*, yet it is quite deserving of specific separation.

It replaces *Athene noctua* in the extreme southern and the south-eastern portions of the Western Palæarctic Region, and is found to the eastward into Afghanistan. In the countries north of the Mediterranean it is of extremely rare occurrence, if found at all. M. A. Lacroix certainly states that it occurs on passage in the Eastern Pyrenees, appearing to come from Spain; I cannot but think, however, that he does not refer to the true *Athene glaux*, but probably to a slightly lighter variety of *Athene noctua*. I possess examples from Greece and Turkey which are clearly referable to *Athene noctua*, being undistinguishable from Spanish specimens. Strickland also states that the Little Owl which is found near Smyrna is *Athene noctua*. In Palestine, however, the present species is met with, and is, Canon Tristram writes (Ibis, 1865, p. 261), "one of the commonest and most universally distributed birds in every part of the Holy Land. In the olive-yards round the villages, in the rocks of the wadys, in the thickets by the water-side, in the tombs or on the ruins, among the desolate heaps which mark the sites of ancient Judah, on the sandy mounds of Beersheba, or on the spray-beaten fragments of Tyre, his low wailing note is sure to be heard at sunset, and himself seen bowing and keeping time to his own music. The Little Owl is a great favourite: he is lucky; and there is a strong prejudice against injuring him, which may partly account for his exceptional numbers. It breeds early; but as I have had nestlings brought to me in May, it is possible it sometimes rears a second family. When disturbed it disappears with magical celerity into a hollow tree, or hole in the ground, or the rocks, as the case may be." According to Mr. Wyatt it is somewhat scarce in the peninsula of Sinai; but in North-east Africa this Owl is very numerous and resident. Captain Shelley says (*l. c.*) that it is found in Egypt and Nubia, where it frequents both trees and rocks, and is very partial to the small clumps which surround the water-wheels so abundant in Egypt; and Von Heuglin says that it is "resident in Egypt, Nubia, and Arabia, but does not appear to occur further south than 14° N. lat. It inhabits houses, walls, ruins, stone-heaps, and old tombs; for he frequently met with it in cemeteries, and even in acacia-groves and date-bushes. It is generally seen in families or pairs, and often in broad daylight, when the sun is shining brightly, in towns and villages. It is by no means shy, and is droll and amusing in its motions. Hartmann met with it in Sennaar. In Lower Egypt it breeds in March, but probably raises two broods, as Von Heuglin found unfledged young at midsummer. In Algeria, according to Loche, it is found in all the provinces; and M. Malherbe received several examples from Bône; but Colonel Irby says (*l. c.*) that it does not appear to occur in the immediate vicinity of Tangier, and that the only specimen he saw was obtained three or four days' journey on the way to Fez.

To the eastward the present species is found as far as India; and Mr. Blanford says that it is "common on the Persian highlands, keeping mostly to rocks, especially masses of rock isolated in a plain, or to the ruined buildings of unbaked brick, which are so common throughout Persia. It lives in holes during the day, and may often be seen in the early morning and in the evening sitting upon rocks or walls. It is rather gregarious, five or six being often seen together, and, like others of the genus, is much more diurnal than most Owls in its habits." Mr. Blyth states that it is common in Afghanistan; and Mr. A. O. Hume (Rough Notes, ii. p. 408) says that he has seen two specimens shot in the Peshawar valley and two others from Afghanistan, and adds that he believes it occurs in India as a mere straggler, and only on the extreme north-western frontier.

In habits the present species closely assimilates to *Athene noctua*, and, so far as I can ascertain, there is no appreciable difference between them in this respect. Its note, which is less frequently heard at night or during the twilight than in the daytime, is also similar to that of the Little Owl.

It feeds on mice, lizards, small birds, and especially on insects, such as grasshoppers, beetles, &c., with which it usually feeds its young. It breeds in similar localities to *Athene noctua*; and its eggs closely resemble those of that species.

Mr. J. H. Gurney, jun., referring to the habits of the present species as observed by him in Algeria, writes (Ibis, 1871, p. 73) as follows:—"These day-Owls sit openly exposed amongst rocks in the high and shelving banks of the Chalif; when frightened they take refuge in crevices, whence it is almost impossible to dislodge them. Their power of crouching aids them in squeezing into small holes, and creeping through narrow apertures. At Guelt-el-Stel and Laghouat their hooting was heard every evening almost before the sun went down. I cannot say whether they keep up their doleful melody all the night; but I used to hear them again at daybreak."

The specimen figured is the bird above described, and is in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. Bizerta, Algeria, February 1858 (*P. L. Sclater*). *b*, ♀. Benisouef, January 18th, 1862 (*Cochrane*). *c*. Southern Persia (*W. T. Blanford*).

E Mus. H. B. Tristram.

a, ♂. El Mariar, Algeria, January 15th, 1857 (*H. B. T.*). *b*, ♀. El Bussah, Palestine, December 5th, 1863. *c*, ♂. Forest of Bashan, March 12th, 1864 (*H. B. T.*).

Suborder ACCIPITRES.

Family VULTURIDÆ.

Genus GYPS.

Vultur apud Brisson, Orn. i. p. 462 (1760).
Gyps, Savigny, Syst. Ois. de l'Egypte, p. 8 (1810).

The Vultures, which have the head bare or covered with down, have been subdivided into six genera by Mr. Sharpe (Cat. Accip. Brit. Mus.), three of which inhabit the Western Palæarctic Region. I have, however, deemed it advisable to include in the Vulturidæ the genus *Gypaëtus*, which has by some authors been placed in a separate family, and which Mr. Sharpe places far apart from the Vulturidæ, in his subfamily Aquilinæ. The Vultures belonging to the genus *Gyps*, of which only one species inhabits the Western Palæarctic Region, are distributed in the Palæarctic, Ethiopian, and Oriental Regions. They are carrion-eaters, feeding on putrid or fresh carcasses and on all sorts of garbage, and do not capture their prey like Hawks. They soar at great altitudes, flying in circles in search of food, which they can discern from a great distance; and when food is plentiful they will gorge themselves until scarcely able to move. Although they fly well, they are heavy and clumsy on the ground, and do not walk with facility. They are sociable, and are usually seen in parties even during the nesting-season. They breed in caves and fissures of the cliffs, constructing a nest of branches, sticks, and grass, which they place on the bare rock, and deposit a single white egg, which is very rarely marked with colour.

Gyps fulvus, the type of the genus, has the bill strong, stout, and deep, the upper mandible rising in front of the cere and curving towards the tip, which is strongly hooked; nostrils exposed, diagonal; head and upper neck covered with short down, the lower neck encircled by a ruff of elongated feathers; wings long, the first primary short, the fourth longest; tail of fourteen feathers; feet strong, the middle toe rather longer than the tarsus, and united to the outer toe at the base by a membrane; claws moderate, slightly curved.



J.Wolf del.

W.Hart lith

GRIFFON VULTURE.

GYPS FULVUS.



J.Wolf del.

W.Hart lith.

GRIFFON VULTURE.

YOUNG

GYPS FULVUS.

(GRIFFON VULTURE.)

Vultur fulvus, Briss. Orn. i. p. 462 (1760).
Le Percnoptère, Buff. Hist. Nat. Ois. i. p. 149 (1770).
Le Griffon, Buff. tom. cit. p. 151 (1770).
Le Vautour, Buff. tom. cit. p. 158 (1770).
Vultur fulvus, Gmel. Syst. Nat. i. p. 249 (1788).
Vultur percnopterus, Shaw & Nodd. Nat. Misc. iv. p. 141 (1793).
Vultur trencalos, Bechst. Gemeinn. Naturg. Vög. Deutschl. i. p. 491 (1805).
Vultur castaneus, Shaw, Gen. Zool. vii. pt. 1, p. 29, pl. 12 (1809).
Gyps vulgaris, Savigny, Syst. Ois. de l'Egypte, p. 11 (1810).
Vultur leucocephalus, Wolf, Taschenb. deutsch. Vogelk. i. p. 7 (1810).
Vultur persicus, Pall. Zoogr. Rosso-As. i. p. 377 (1811).
Vultur vulgaris, Vieill. Tabl. Encycl. et Méth. iii. p. 1170 (1823).
Vultur albicollis, C. L. Brehm, Vög. Deutschl. p. 1010 (1831).
Vultur chassefiente, Rüpp. Neue Wirbelth. Vög. p. 47 (1835).
Vultur kolbii, Temm. Man. d'Orn. iv. p. 587 (1840, nec Daud.).
Gyps fulvus (Gm.), G. R. Gray, Gen. of B. i. p. 6 (1844).
Vultur fulvus occidentalis, Schlegel, Rev. Crit. p. xii. (1844).
Gyps occidentalis, Bp. Consp. Gen. Av. i. p. 10 (1850).
Gyps albicollis, L. Brehm, Naumannia, 1851, Heft iii. p. 23.
Vultur ægyptius, Licht. Nomencl. A. p. 1 (1854).
Vultur fulvus orientalis, Schlegel, Mus. Pays-Bas, *Vultures*, p. 6 (1862).
Gyps hispaniolensis, Sharpe, Cat. Accip. Brit. Mus. p. 6 (1874).

Vautour Griffon, French; *Buitre*, *Pajaraco*, Spanish; *Grifone*, Italian; *Nissr*, Arabic; *Enisser*, Moorish; *weissköpfiger Geier*, German; *de gewone Gier*, Dutch; *Gul-Grib*, Danish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 426; Werner, Atlas, *Rapaces*, pl. 2; Fritsch, Vög. Eur. taf. 1. fig. 3; Naumann, Vög. Deutschl. taf. 2, 338; Gould, B. of Eur. pl. 1; Schlegel, Vog. Nederl. pl. 40; Susemihl, Vög. Eur. taf. 2, 3, 3 A.

Ad. capite et collo ferè nudis sparse setis tectis, collo imo lanugine circumdato: corpore suprà et subtùs griseo-cervino, alis et caudâ saturatioribus, illis griseo lavatis: tectricibus alarum majoribus centraliter saturatioribus: collo imo lanugine circumcincto: rostro schistaceo: iride corylinâ: pedibus pallidè fuscis.

Juv. capite et collo sparsè lanugine tectis: collo imo plumis lanceolatis albis pallidè fulvo lavatis circumdato:

corpore suprà pallidè rufescenti-isabellino, cinereo tincto: tectricibus alarum fuscis fulvido terminatis, medianis dorso concoloribus et in parte apicali fulvido lavatis: remigibus et rectricibus fuscis: corpore subtùs rufescenti-isabellino, albido striato.

Adult Male (Souk Harras). Head and neck sparingly covered with white hairs; ruff composed of white down, which is more profuse on the hind neck; upper parts generally stone-buff, the larger wing-coverts darker in the central portions of the feathers; wings and tail darker than the rest of the upper parts, the former shaded with grey; underparts stone-buff, the crop-patch darker and marked with narrow pale stripes; bill slate; iris hazel; legs light brown. Total length about 46 inches, culmen 3·4, wing 30·0, tail 14·9, tarsus 4·0.

Nearly Adult Female (Gennesareth, 29th February). Head and neck covered with short white down; lower neck encircled by a ruff of long, lanceolate, creamy-buff feathers; upper parts generally creamy buff marked with dull earth-brown; quills and tail dark brown, the former with a pale-brown tinge on the upper surface; underparts creamy buff dashed and irregularly striped with warm earth-brown and slightly tinged with pale rufous; bill slate-colour; iris hazel; legs light brown. Total length about 48 inches, culmen 3·5, wing 28·4, tail 15·0, tarsus 4·4.

Young (Southern Spain). Upper parts generally ashy fawn, the base of the feathers tinged with grey; larger wing-coverts brown tipped with fulvons, median coverts pale fawn shaded with fulvous towards the tips, quills black, the secondaries tinged with brown; tail blackish; rump rufous fawn striped with whitish; ruff creamy white tinged with fawn; underparts rufous fawn streaked with white.

The Griffon Vulture inhabits Southern Europe and Africa, ranging eastward into Western Asia. Occasionally, though rarely, it straggles into Northern Europe, and has been met with even in Great Britain on one occasion, as an adult example was caught by a lad on the rocks near Cork Harbour in the spring of 1843.

It has not been recorded from Sweden or Norway; but Mr. Benzon informs me that one was shot in Jutland, Denmark, in the spring of 1858, and according to Dr. Kjærbölling, one was obtained there previously.

In Russia, according to Mr. L. Sabanäeff, it is found in the Kaslinsky Ural, where it breeds; and he further states that it ranges as high as 59° N. lat., having been obtained in the Pavdinskaia Dacha. He records the capture of one within sixty miles of Moscow in 1841, and says that sportsmen have assured him that they have seen this species in the district of Jaroslaf, which he thinks may have been the case. Severtzoff speaks of it as an annual migrant in the Government of Voronege. In Poland it is rarer than *Vultur monachus*; and Mr. Taczanowski writes that in the Warsaw Museum there is a specimen which was killed near Samosé about twenty years ago; there was also a specimen taken alive near Warsaw, which is now in the collection of Canon Wyszynski.

It is of very rare occurrence in North Germany; but Borggreve says that examples have been obtained near Danzig, in Ober Lausitz, near Oldenburg and Münster. Professor Schlegel includes it as a straggler to Holland; and Dr. Altum writes (J. f. O. 1863, p. 112) that it has occurred on several occasions in East Friesland.

It is said to have been observed near Luxembourg in 1855, and has been obtained in the north of France. Baillon states that an immature example was killed near Abbeville, and one

was obtained near Armentières, in July 1828. In Southern France it becomes tolerably common; and Baron J. W. von Müller says that many breed in the Cevennes, and from there they visit, during the summer, the Camargue and the Crau. In Portugal and in Spain it is resident and numerous. Lord Lilford informs me that it is less abundant in Central Spain than *Vultur monachus*; and Colonel Irby writes (Orn. Str. Gibr. p. 29) that "near Gibraltar they are very plentiful, nesting in colonies not exceeding thirty-five pairs, in holes or, rather, small caves in the perpendicular crags or 'lajas,' which are found in many of the Sierras. The most important breeding-places near to Gibraltar are the Sierra de San Bartolomé, the Sierra de Plata, el Organo in the Sierra Enmedia, and la Laja del Sicar, all near Taivilla."

Mr. A. von Homeyer says that it visits the Balearic Isles in winter, sometimes in considerable numbers, but is never found there in the summer.

In Savoy, according to Bailly, it but rarely occurs, and only singly, apparently driven out of its usual haunts by a severe gale of wind or bad weather. It has only been recorded as occurring in the mountainous districts, and usually towards the spring, after a severe and long winter.

In Italy the Griffon Vulture is resident in the Maritime Alps, and also in the mountains of Sicily and Sardinia, whence individuals straggle to other parts of the country. Mr. A. B. Brooke says (Ibis, 1873, p. 145):—"It is resident, and by no means uncommon in Sardinia, and breeds in the island. Their appearance, however, in some localities is uncertain, many days passing without one being seen. In Sardinia they are far from bold, but are extremely shy and suspicious; and I have frequently seen them refuse to be attracted by the most tempting pieces of meat, after having soared round once or twice, and failed to satisfy themselves of the perfect safety of the locality. The greatest number I ever recollect having seen together was on one occasion near Oristano, when I counted about eighty soaring over a dead carcass."

In the Ionian Islands, according to Lord Lilford (Ibis, 1860, p. 1), this Vulture is "abundant in Epirus, and indeed in all parts of the mainland which I have visited during the winter months. At Butrinto, a favourite shooting-resort from Corfu, I have observed great numbers, particularly during the rainy weather of January and February of 1857, when they were attracted by the quantities of horses and cattle which died and were left to decay in the marshes. I never could discover that these Vultures bred in the neighbourhood of the coast; but a pair or two are to be observed at almost all seasons in the vicinity of Santa Quaranta, Tre Scoglie, Butrinto, Ptelia, Pagania, Livitazza, and Phanari, small harbours on the coast of Epirus frequented by sportsmen from Corfu." It is resident in Greece, but very much more numerous during the summer months, when, according to Lindermeyer, it is often seen in flocks of from twenty to twenty-five individuals; but, on the other hand, Von der Mühle states that he has never seen this Vulture in flocks.

It breeds in the cliffs and rocks of almost all the mountains of Greece. In Southern Germany it is only known as a somewhat rare straggler, except on the Lower Danube. Dr. Fritsch, who cites several instances of its occurrence in Bohemia, says that it visits that country pretty regularly, though at intervals of several years. In 1866 a large flock appeared on the battle-field near Sadowa, and two were killed. The Ritter von Tschusi-Schmidhofen writes to me that, according to Heinrichs, "a pair nested in 1831 in the Gross-Barania mountain (Silesia); and in Upper and Lower Austria, the Tyrol, Salzburg, Styria, Galicia, Krain, and Kärnten it is

occasionally seen. It breeds in Hungary and Siebenbürgen, and is seen during the summer in large flocks with *V. cinereus*, collected where carrion is, but is not so common as the latter species." I frequently saw Vultures in flocks on the Lower Danube, especially in Servia and Bulgaria; and Mr. Farman says (Ibis, 1868, p. 408):—"Throughout the whole of Central Bulgaria this is one of the commonest birds; but, from the nature of the country, it is particularly partial to the Pravidy valley, which, being in general pretty well supplied with carrion, is peculiarly adapted to this species and others of kindred habits. The valley is about fifteen miles in length, and varies from a quarter of a mile to a mile and a half in breadth. It is surrounded on all sides by precipitous hills, some thickly wooded, others being barren and bare, rising to a height of from one to six or seven hundred feet above the level of the plain, and is watered by a small stream, which in the autumn is nearly dry, but at times overflows nearly the entire valley, thus forming numberless stagnant pools. In some places it resembles nothing so much as a deep ravine cut in the rocks, which rise perpendicularly on both sides; and it is these spots that are so much frequented by the Griffon Vulture and a variety of other birds; and, the rocks being riddled with naturally formed caves, they breed here literally in flocks." Messrs. Elwes and Buckley found it numerous in Macedonia, but not so common there as in Bulgaria.

In Southern Russia it is pretty generally distributed, being, according to Professor von Nordmann, more or less common on the coasts of the Black Sea, most numerous in Bessarabia, and occurs annually near Odessa. In Bessarabia flocks consisting of thirty or forty individuals are often seen flying at a great altitude, on the look-out for food.

Throughout Asia Minor the Griffon Vulture is common in suitable localities; and Dr. Krüper informs me that a small colony breed near Smyrna. Lord Lilford met with it near Suda in Crete, and in Cyprus, in which latter island it particularly affects the cliffs between Cape Zéphgari and Cape Gato, on the south coast.

Canon Tristram writes (Ibis, 1865, p. 246):—"The numbers of the Griffon-Vultures in every part of Palestine are amazing; and they are found at all seasons of the year. I do not think that I ever surveyed a landscape without its being enlivened by the circling of a party of Griffons. Many colonies of eyries came under our observation in the gorge of the Wady Kelt (the supposed Cherith), near Jericho; in the cliffs near Heshbon, under Mount Nebo; in the ravine of the Jabbok; in a gorge near Amman, the ancient Rabbah: two large colonies inhabit wadys on the north and east sides of Mount Carmel, whence we procured several eggs; but the most populous of all were the 'Griffonries' in the stupendous cliffs of the Wady Hamam, 'the robbers' caves' to the south-west, and in the deep glen of the Wady Leimun at the north-west of the plain of Gennesaret. In either of these sublime gorges, the reverberating echoes of a single rifle would bring forth Griffons by the hundred from their recesses. I counted on one occasion a hundred and twenty thus roused, and then gave up the reckoning in despair."

In North-east Africa the Griffon is very common; and, Captain Shelley writes, it is "plentifully distributed throughout Egypt and Nubia. At Edfoo I met with several hundreds of them around the body of a dead camel, which they were extremely unwilling to quit, and allowed my dragoman to hit at them with his stick before they would take wing. Towards the end of April I observed a pair in the mountains of Aboo Fayda, where they were probably breeding." Von Heuglin, who treats of the Griffon of North-east Africa as being Schlegel's *Vultur fulvus occidentalis*, says that

he found it along the coasts of the Red Sea to 16° N. lat., in Egypt and Nubia, in Abyssinia to an altitude of 12,000 feet, and sparingly in Kordofan and the Lower, Blue, and White Nile. How far south the present species is to be met with in Africa I cannot say; but there is a specimen in the British Museum procured by Major Denham in Central Africa. In South Africa the Griffon Vulture is replaced by *Gyps kolbi* (Daud.), which, according to Mr. Sharpe (Cat. Accipitr. p. 9), inhabits "South Africa, to the Zambesi on the east, and to Damara Land on the west coast, but more sparingly in the latter country." In North-east Africa, however, *Gyps fulvus* is very numerous. Loche states that it is very common in the three provinces of Algeria, and differs in no respect from its European congener. It breeds there about the month of March, nesting in the most inaccessible parts of the rocks, and deposits two eggs. Mr. Salvin remarks (Ibis, 1859, p. 178) that he never met with it in the Regency of Tetuan, and that "none were seen; nor was it till we reached Souk Harras that they first showed themselves, though I have since suspected that the greater part of a large number of birds of prey, observed soaring at a considerable distance near Sidi Yousef, on the Tunisian frontier, were of this species. At Djebel Dekma were several pairs, as also at Khifan M'sakta; but Kef Laks and its neighbourhood seem to be their head quarters." On the other hand, Mr. C. F. Tyrwhitt-Drake says (Ibis, 1867, p. 423) that he found this Vulture "common at Tetuan;" he saw several towards the end of March, and believes that some remain there all the winter. In Tangier, according to Favier, it is numerous both as a resident and on passage.

How far east the present species ranges I cannot precisely define; but Severtzoff met with it in Turkestan; and Mr. Blanford says it is the common Vulture of Persia. In India it is replaced by a nearly allied form, *Gyps fulvescens*, Hume (Ibis, 1869, p. 356).

In habits the Griffon assimilates tolerably closely to the Cinereous Vulture; and, like that bird, it is essentially a carrion-eater, and acts as a scavenger in hot climates, where it is most useful in disposing of any carcass that may be poisoning the air around it. When on the wing it is generally seen circling round at great altitudes, looking like a speck in the sky; but directly one spies a carcass it descends to it, and in a very short time is joined by others of its species; for, as it says in Holy Writ, where the carcass is, there are the Eagles (or rather Vultures, for the Eagle of Scripture is undoubtedly the Griffon Vulture) gathered together. Much has been written respecting the mode in which the Vulture discovers its food; and some naturalists hold that it does this chiefly by its keen sense of smell—but, I believe, erroneously; for it appears to rely almost entirely on its keen sight. Canon Tristram, referring to this question, writes (Ibis, 1859, p. 280):—"That the Vulture uses the organ of sight rather than that of smell, seems to be certain from the immense height at which he soars and gyrates in the air. In this instance one solitary bird descended, and half an hour afterwards was joined by a second. A short time elapsed, and the Nubian Vulture (*Otogyps nubicus*) appeared, self-invited, at the feast; and before the bones were left to the Hyæna, no less than nine Griffons and two Nubians had broken their fast. I should hesitate to assert that they had satisfied their appetites. I have observed the same regular succession of diners-out on other occasions. May we not conjecture that the process is as follows?—The Griffon who first descries his quarry descends from his elevation at once. Another, sweeping the horizon at a still greater distance, observes his neighbour's movements and follows his course. A third, still further removed, follows the flight of the second;

he is traced by another; and so a perpetual succession is kept up as long as a morsel of flesh remains over which to consort. I can conceive no other mode of accounting for the numbers of Vultures which in the course of a few hours will gather over a carcase, when previously the horizon might have been scanned in vain for more than one, or at the most two, in sight. Does not this explain the immense number of Vultures who were congregated in the Crimea during the siege of Sebastopol, where the bird was comparatively scarce before? May not this habit of watching the movements of their neighbours have collected the whole race from the Caucasus and Asia Minor to enjoy so unwonted an abundance? The Arabs believe that the Vultures from all North Africa were gathered to feed on Russian horses in the Crimea, and declare that during the war very few 'Nissr' were to be seen in their accustomed haunts." Dr. Kirk, also, speaking of the habits of the Vulture as observed by him on the Zambesi, says (Ibis, 1864, p. 314), that "if game be left for an hour in the open plain while the men come to carry it off, the birds will descend, and in a very short time completely devour it. This is not so if it be covered over with a little grass or with branches, clearly proving that sight alone is the sense by which the birds discover their prey. If part of the animal is exposed, it matters not—probably owing to its being mistaken for one asleep; nor does the presence of blood seem to guide the birds, if the carcase be concealed from view." Though the Griffon Vulture is tolerably active on the wing, and traverses considerable distances without alighting to rest, it appears to be heavy and inert when on the ground, and will sit for long almost motionless, especially after it has had a hearty meal; for it is like all carrion-eating species, extremely greedy, and will gorge itself until scarcely able to move. Canon Tristram, speaking of the habits of the Griffon as observed by him in Palestine, says, "the Griffons were in the habit of soaring high, and sweeping the horizon about daybreak; then in about two hours they would return, and either betake themselves to the work of incubation, or perch motionless in long rows on the most conspicuous ledges and points of the precipices until the evening. They would then take a little airy exercise before retiring to rest. Like all other carrion feeders, the Griffon must have the power of enduring prolonged abstinence; for it was utterly impossible that the neighbourhood of Gennesaret could have afforded sustenance to the flocks, amounting to five hundred birds, on the lowest computation, which inhabited the valleys close to it; and yet, so far as we could observe, for many days the sitting birds and their mates never left the wadys for more than an hour or two. Each had its own perch, its reserved seat; and daily we noted Vultures in exactly the same spots and in exactly the same numbers as we had seen them before. Nor were the Griffons first in the field for what little carrion our immediate neighbourhood afforded. The wolves and jackals always came in for the lion's share of a feast whenever a horse or cow died, as frequently happened near our camp. On a subsequent occasion, on the north side of Hermon, we observed them teaching the Neophrons the same lesson of patience they had learnt here. A long row of Egyptian Vultures were sitting on some rocks, so intently watching a spot in a cornfield that they took no notice of our approach. Creeping cautiously near, we watched a score of Griffons busily engaged in turning over a dead horse, one side of which they had already reduced to a skeleton. Their united efforts had just effected this, when we showed ourselves, and they quickly retired. The inferior scavengers, who dreaded us much less than them, at once rushed down to the repast, and, utterly regardless of our presence within ten yards of them, began to gorge. We had hardly retired two hundred yards

when the Griffons came down with a swoop, and the Neophrons hurriedly resumed their post of observation; while some Black Kites remained, and continued to filch a few morsels by their superior agility from their lordly superiors."

Unlike the Cinereous Vulture, which nests in trees, the Griffon Vulture is a rock breeder, nesting in caves and hollows of the cliffs, the nest consisting of a few sticks or green branches and grass, placed on the bare rock. Colonel Irby writes (*l. c.*):—"One egg only is the usual complement; and they lay about the 20th of February. Should the first egg be taken, it seems that they lay again about the 15th of April. Of course it is impossible to prove this; but eggs were laid at that time in nests which had been robbed in February. The egg is usually white, but is occasionally marked with buff-coloured blotches—the nest being sometimes merely three or four bits of green bushes laid on the rock.

"It was a fine sight to see thirty or more of these gigantic birds fly out at once with a rushing noisy flight from their nests, which they do if one fires a shot at the bottom of the cliff in which they breed; and this is the only method of finding the exact position of their nests, as well as those of other rock-nesting birds, though later on each large crevice or hole where there is a nest is plainly visible, owing to the dung which covers the face of the rock below, looking as if a bucket of whitewash had been poured out of the cave. Vultures in Andalucia are far more wary than in other countries in which I have seen them, except of course during the breeding-season.

"How the numbers which inhabit Andalucia at times find sufficient to eat is a puzzle to me; they must be able to fast for some days, or else travel immense distances for their food, as in the winter and spring it is unusual to see dead animals about; but in the hot parching summer months vast quantities of cattle die of thirst and want of pasture. A bull-fight is a sort of harvest to Vultures, which flock in great numbers to revel on the carcasses of the unfortunate horses that have been so cruelly killed." Mr. Osbert Salvin, who found large numbers of these Vultures breeding in Algeria, says (Ibis, 1859, p. 178):—"In one instance only did we find an egg and a young one in the same nest; in all other cases, one egg or one young one was the invariable number. The eggs appear to be laid in the month of February, as most of the nests contained young in the beginning of April. During the time of incubation, one of the parent birds sits constantly, and, if frightened off, returns immediately. The nest is composed almost entirely of sticks, which are used in greater or less abundance, as the situation requires. The eggs obtained from wild birds generally show indications of natural colouring, in addition to the blood and dirt with which they are usually stained. This colouring is dispersed in faint spots of a reddish hue, sometimes all over the egg, but generally at the larger or smaller end. Of the four eggs in my collection, three exhibit traces of this marking. The eggs usually placed in collections are laid by birds kept in confinement, and this colouring is not observable. The young of the Griffon Vulture, on emerging from the egg, is covered with white down; the sides are dark."

In my collection I have a tolerably good series of eggs of the Griffon Vulture, all of which are pure white, except one from Spain, which is very distinctly spotted with red at the larger end. In size they vary from $3\frac{2}{4}\frac{3}{0}$ by $2\frac{2}{4}\frac{3}{0}$ to $4\frac{3}{4}$ by $2\frac{3}{4}\frac{5}{0}$ inches; and Dr. E. Rey writes to me as follows:—"I find that the average size of forty eggs is 92·4 by 69·2 millims., the two largest measuring 99·0 by 71·5 millims., and 93·0 by 72·75 millims., and the two smallest—84·5 by 67·0 millims.,

and 90·0 by 64·0 millims. Amongst the great numbers of eggs that have passed through my hands (at least a hundred), I never met with speckled ones as described by some authors. It often happens that the egg is spotted with dirt or blood; but from the entire absence of genuine markings the eggs of this species can be readily distinguished from those of '*Vultur monachus*' (*cinereus*). The usual number of eggs in a nest is two, but often only one."

Professor Schlegel separates the Griffon Vulture of Europe and North Africa into two subspecies, *Vultur fulvus orientalis* and *Vultur fulvus occidentalis*; and Mr. Sharpe, who took the same view, has given the name of *Gyps hispaniolensis* to the North-African and West-European bird. It is by no means easy to give a decided opinion on this question, owing chiefly to the extreme difficulty in collecting together a sufficiently large series of examples from different localities; but, judging from those I have seen in different continental and English museums, I quite agree with the view taken by Mr. Gurney (Ibis, 1875, p. 88), that Mr. Sharpe's *Gyps hispaniolensis* is nothing but the young of the Griffon Vulture; and in this view Mr. Sharpe now acquiesces. As Mr. Gurney very aptly remarks, the adult Griffon always has the ruff composed of white down, and the immature bird of lanceolate feathers; and as Mr. Sharpe describes his adult *Gyps hispaniolensis* as having the ruff composed of feathers, not down, it is evidently immature. Mr. Gurney further points out that the Spanish Griffons are not always particularly rufescent, as shown by examples in the Norwich Museum. It appears to me that Schlegel's *Vultur fulvus occidentalis* is the fully adult bird of *Gyps fulvus*; for he refers to Susemihl's plate 2 as being his bird, and this plate shows the pale stone-buff plumage and downy ruff of the old bird, such as I have above described. Mr. Sharpe, amongst the illustrations he cites of *Gyps hispaniolensis*, also includes this plate; but his description of that bird certainly agrees better with Susemihl's plates 3 and 3 A, which, according to Susemihl, represent the immature plumages of *Gyps fulvus*. Schlegel also cites Susemihl's plate 3 as representing the immature bird, and plate 3 A as representing the bird of the year, of the true *Gyps fulvus*. In any case, if the pale-rufous-plumaged bird, which I hold to be the young of *Gyps fulvus*, were really distinct, it would stand as *Gyps albicollis*, C. L. Brehm (as this naturalist gives, in Vög. Deutschl. p. 1010, a good description of it), and Mr. Sharpe's name would drop into a synonym. I may also remark that Mr. A. O. Hume (Rough Notes, p. 17) describes the young of *Gyps himalayensis* as being darker and browner than the adult, each feather having a broad central yellowish-brown or fulvous stripe.

Not having any skins of this bird in my own collection as they are so bulky, I have had to depend chiefly on the series in the British Museum and the Norwich Museum, and in the preparation of the above article have examined the following specimens:—

E Mus. Brit. Reg.

a. Southern Spain. *b*. Europe. *c*. Athens. *d*. Dalmatia. *e*. South Hungary. *f*. Central Africa.

E Mus. Norv.

a, juv. Pyrenees (*Parzudaki*). *b, juv.* Athens (*Parzudaki*). *c, ♂ juv.* Tangier (*Favier*). *d, ♂ ad.* Souk Harras, Algeria, April 18th, 1857 (*H. B. Tristram*). *e, pull.* Algeria (*Parzudaki*). *f, juv.* Abyssinia (*Parzudaki*).

E Mus. H. B. Tristram.

a, ♀ ad. Plain of Gennesaret, February 29th, 1864 (*H. B. T.*).

Genus VULTUR.

Vultur, Linnæus, Syst. Nat. i. p. 122 (1766).
Ægypius apud Savigny, Syst. Ois. de l'Egypte, p. 74 (1810).
Gyps apud Bonaparte, Comp. List, p. 2 (1838).
Polypteryx apud Blyth, Ann. Nat. Hist. xiii. p. 115 (1844).

This genus contains only a single species, *Vultur monachus*, which inhabits the Mediterranean subregion and ranges eastward to India and China.

In habits it resembles the Griffon, but evinces a partiality for wooded districts, whereas *Gyps fulvus* affects the open country and rocky regions. Like that species it feeds on carrion; and the two frequently meet on the same carcass. It nests, however, on trees, and never, so far as I am aware, in cliffs, and builds a bulky nest of boughs lined with twigs and wool, in which it deposits a single large white egg, more or less richly marked with red.

Vultur monachus, the type of the genus, has the bill strong, stout, deep, the line of the culmen rising slightly from the cere, and then decurved towards the tip, which is hooked; nostrils exposed, roundish; head and upper neck clothed with short down, the lower neck encircled by a ruff of pointed downy feathers; wings long and broad, the secondaries in the closed wing nearly as long as the primaries; tail moderate, rounded; feet strong; the tarsus reticulated, slightly feathered above; the middle and outer toes united at the base by a membrane; claws moderate, slightly curved.



CINEREOUS VULTURE.
VULTUR MONACHUS
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VULTUR MONACHUS.

(CINEREOUS VULTURE.)

Crested or Coped Black Vulture, Edw. Glean. ii. p. 171 (1760).
Vultur monachus, Linn. Syst. Nat. i. p. 122 (1766).
Le Vautour, Buff. Pl. Enl. 425 (1770).
Vultur cinereus, Gm. Syst. Nat. i. p. 247 (1788).
Le Chincou, Levaill. Ois. d'Afr. i. pl. 12 (1799).
Vultur chincou, Daud. Tr. d'Orn. ii. p. 12 (1800).
Vultur vulgaris, Daud. Tr. d'Orn. ii. p. 16 (1800).
Vultur arrianus, Daud. Tr. d'Orn. ii. p. 18 (1800).
Ægypius niger, Savigny, Ois. d'Egypte, p. 74 (1809).
Vultur niger, Licht. Verz. Doubl. p. 62 (1823).
Vultur imperialis, Temm. Pl. Col. 426 (1827).
Gyps cinereus, Bonap. Comp. List B. Eur. & N. Am. p. 2 (1838).
Ægypius cinereus, Bonap. Cat. Met. Ucc. Eur. p. 17 (1842).
Polypteryx cinereus, Blyth, Ann. Nat. Hist. xiii. p. 115 (1844).

Vautour arrian, French; *Buitre negro*, Spanish; *grauer Geier*, German; *Pica osso*, Portuguese; *Grågrib*, Danish.

Figuræ notabiles.

Edw. Gleanings, ii. pl. 290; Buff. Pl. Enl. 425; Levaill. Ois. d'Afr. i. pl. 12; Temm. Pl. Col. 426; Naum. Vög. Deutschl. i. taf. 1; Gould, B. of Eur. i. pl. 2; Fritsch, Vög. Eur. tab. 1. fig. 4; Jaub. & Barth. Rich. Orn. pl. i.; Bree, B. of Eur. i. p. 7.

Ad. ex chocolatino niger, vix purpureo nitens: remigibus et rectricibus nigris: facie laterali lanugine nigrâ indutâ: pileo summo et occipite lanuginosis chocolatinis, hôc pallidiore: collo postico et laterali pallidè livido: rostro nigricante, cerâ pallidè cyanescente, pedibus lividè cinereis.

Juv. multò pallidior, brunnescentior, remigibus rectricibusque nigricantibus: pilei collique lanugine sparsiore et pallidiùs brunneâ.

Adult Male. General appearance dull sooty black, having a brownish tinge when viewed in certain lights; feathers on the fore part of the neck extending downwards on to the chest, hair-like, and of a deep black colour; a large patch of soft downy black feathers extending down the sides of the lower part of the neck on to the breast; this down flanked on each side by a bunch of long, lanceolate, dusky-black feathers, which point inwards over the breast; the whole of the crown, sides of the head and the throat, extending in a line down the latter, covered with short, downy, black feathers, very thick and soft to the touch on the head, thinner on the throat; sides of the neck from the gape and entire back of the neck bare, livid flesh-colour when alive, but yellowish red in a dried skin; encircling the neck a band of pointed downy feathers, particularly long on the back of the neck, where they form a kind of ruff;

entire cere and basal part of lower mandible devoid of feathers and of a livid flesh-colour when adult, deep brownish-red in dried skins; bill itself black; nostrils small and rounded; feet strongly reticulated. Total length about 3½ feet, of bill from front 3·3 inches, from gape 3·8, wing about 2½ feet from carpal joint, tarsus 4 inches.

Young. General appearance more ragged and much browner in colour; the downy portions of the head more scanty.

The Cinereous Vulture inhabits the southern countries of Europe, but rarely ranging into the northern or even central portions. It has never occurred in our island, but has been found as far north as Denmark. In Central Russia Sabanäeff did not meet with this Vulture; and it does not appear to extend its range as high as the country he explored. It occasionally visits Poland; and there are, as we are informed by Mr. Taczanowski, two specimens in the Warsaw Museum, the one killed at Kielce and the other at Rakolupy, in the Government of Lublin; and others have, during the last thirty years, been killed near Warsaw, in the Government of Lublin, and near Lomze. Borggreve records an instance of its occurrence in Silesia, another in Ober-Lausitz, and one in Eastern Prussia; thus it evidently occurs very rarely in Germany. Boie mentions that some years ago a small flock appeared at Fredriksstad, in Denmark, two of which were shot. According to Mr. Teilmann it was procured between Fanö and Sonderö over fifty years ago (*teste* Kjærbölling). According to Degland and Gerbe it appears accidentally in Provence, Languedoc, and Dauphiné; a large flock passed near Angers in October 1839, and, from all accounts, must have been composed of over a hundred individuals; and Jaubert and Barthélemy-Lapommeraye record it as passing regularly through the south of France, and as annually seen in the department of Bouches du Rhône. In Switzerland, according to Bailly, it has occurred but very rarely; and the same is the case as regards Savoy. He refers to an old male bird procured near Bonneville.

There are, however, few parts of Europe where this species is so numerous as in Spain; and we may refer to the excellent notes on it published in 'The Ibis' by Lord Lilford and Mr. Howard Saunders. The latter gentleman writes that it is "by no means rare throughout Andalucia, nesting in pine trees in the forests of Segura, also near Utrera. All the eggs taken in Spain are much suffused with colour, many being as strongly marked as those of *Neophron percnopterus*." He also further writes that he observed it in Mallorca, where it is resident. Lord Lilford states that it is by far the most common Vulture in the Castilles. In Portugal it is, according to the Rev. A. C. Smith, "sufficiently well known to enjoy a separate specific name in Portuguese, a distinction only accorded to those birds habitually met with. The title, however, which it has received seems by some mischance to be usurped from another species, and to belong of right to *Gypaëtus barbatus*, at all events in the neighbouring country of Spain."

With regard to its occurrence in Sicily, Doderlein says that Benoit's description leaves no doubt as to the occurrence of this species; but of late years it would appear to have become scarce, and indeed almost unknown in that island. Salvadori records several occurrences in Italy; but its appearance there is accidental, whereas in Sardinia it is resident and the most abundant of the family.

Lindermayer writes that it is scarcely less common in Greece than the Griffon Vulture; and

Dr. Erhard states that it breeds in the Cyclades, but leaves before the winter. Lindermayer, however, says that it is found during the whole year, and especially during the winter, when it frequents the plains, and he found it breeding in Attica from Corinth to Livadia, procuring both eggs and young. Lord Lilford thinks that he saw it on the Ionian Islands, and writes as follows:—"I once, and once only, observed a very large black-looking Vulture engaged on the remains of a horse near Butrintò, in the winter of 1857. It certainly was not *Gyps fulvus*. The Corfu bird-preserver told me that he had seen a Black Vulture from the mainland, but that it was very rare."

Respecting the range of the Cinereous Vulture in the Austrian dominions, Count von Tschusi Schmidthofen informs us that "it is rarer than the Griffon, and occurs but seldom in the northern and western portions of the dominion. In Bohemia one was killed at Königgrätz in 1833, and in 1854 one, out of a large number, was killed on the Georgsberg, near Raudnic, and another was obtained alive near Leitomischl (Dr. Fritsch, J. f. O. 1871, p. 175). In the Franzens Museum at Brünn, there is a specimen obtained in June 1837 in the Klobouker district (Brünner Kreis), and Von Hüber obtained one in 1840 at Steinburg, in Kärnthen. In Styria it has only been observed in the southern part of the country, one having been obtained on the 13th July, 1844, near Pettau (Seidensacher, Naum. 1858, p. 467). In Siebenbürgen it is not rare, either in the mountains or the plains, and generally occurs in large companies, not unfrequently walking about amongst the cattle. In Galicia, according to Count Casimir Wodzicki, it breeds (?) in the High Tatra, and is sometimes seen near the villages in the winter. The Count met with five in the Sambor district, which were feeding on a carcass, and were so tame that two were knocked down, one killed and the other winged. One was shot on the 24th of August, 1861, at the village of Ludzimierz, near Noroglarg; and Schauer, of Lemberg, obtained one which had been winged. In the Cracow Museum there are two adult specimens. In 1835 twenty-five appeared near the small town of Sokal, and one, a brown one (*V. fulvus*), was shot; and the same year almost all the cattle in that district died of the cattle-plague, so that on many farms there remained scarcely a single head. In Hungary it has been observed near Ofen by Pelényi, and Baron Löberstein writes that it is common in the south; and Dr. A. Fritsch often saw it in the Banat." Captain Elwes found it common in Macedonia and Bulgaria; in the former country it was numerous on the plains in February, when he frequently saw it in parties of five or six individuals.

It is very numerous on the Southern Danube, where Dresser often had opportunities of observing it. In Southern Russia Professor Nordmann only noticed it on the steppes of Bessarabia, where it is numerous, and where it also winters. He states that it probably occurs in the Crimea, and that the Moldavians say that it breeds in the Carpathians.

Canon Tristram writes that it is "by no means common in Palestine; but a few appear to be scattered over the country, living generally in the neighbourhood of, but not exactly in company with, the Griffons, from which, on the wing, they are not easily distinguished, unless the two species be seen flying in company. During the winter we observed it once or twice in Central Palestine—but only once during our long sojourn near the Dead Sea, when a solitary bird of this species was put up near the top of a mountain behind Engedi. We never afterwards, not even in the Lebanon, observed this noble bird."

In Northern Africa it is, though not uncommon, nowhere numerous. According to Captain Shelley "it ranges throughout Egypt and Nubia, but is nowhere abundant. It may occasionally be seen on the sandbanks, either singly or, more frequently, in company with flocks of *Gyps fulvus*." Heuglin writes that it is "a very rare straggler, and that he only once met with it, in October 1861, near Beni-Suéf."

In Algeria it is, according to Loche, not common, and only met with singly or in pairs. From here it is said to extend down to the neighbourhood of Cape-Coast Castle, where Mr. Fraser records it as living in the smaller trees near the houses (?). Passing to the eastward we find it in India; and Captain Beavan states that it appears regularly every cold season at Umballah, which is the only station in the North-west Provinces of India where he ever noticed it. It is not common. Colonel Tytler, however, was lucky enough to secure a pair of this fine bird at Umballah in the cold weather of 1865–66. Dr. Jerdon, in his supplementary notes to the 'Birds of India' (Ibis, 1871, p. 234), writes that he found this fine Vulture by no means rare throughout the greater part of the North-west Provinces, becoming more common in the country north-west of Delhi in the cold weather. It breeds, occasionally at all events, on trees in the outer ranges of the Himalayas. Mr. Hume, in his 'Rough Notes,' writes as follows:—"I have been unable to obtain certain information as to the breeding of this noble bird within our limits; but it most certainly *does* breed in the Himalayas, as I have seen a perfect egg which was extracted from the oviduct of a female shot in March 1865 between Dalhousie and Murree. Nests are likely to be found anywhere in precipitous places in the Himalayas, or perhaps in large trees in the Sub-Himalayan ranges, west of the Ganges. Eastward of this the species seems to have far fewer representatives, though Dr. Jerdon has seen it at Darjeeling, and specimens have been obtained in Assam and Bhotan." In addition to this, Mr. A. O. Hume sends us the following particulars:—"Generally I may summarize the distribution of this species in India thus. It occurs throughout the Punjaub, North-west Provinces, Oudh, and Rajpootana, north-west of the Avavalli hills during the cold weather, being most abundant in the far north-west, and becoming less and less common as you proceed south or east. Besides the provinces above noted, a few specimens are met with in that portion of the central provinces formerly known as the Sagar and Nerbuddah territories, and in the northern or Shikarpoor collectorate of Sindh, where I this year shot a specimen." Captain Hutton also gave Mr. Hume the following notes, viz.:—At Mussooree, about 5500 feet of elevation, it cannot be called rare, although at the same time it is by no means abundant. In the Dehra Dhoon it is not so common as in the lower hills; but one was seen on the Eastern Dhoon, near Hurdwar, in January, sitting on the branch of a lofty tree beside a large nest made of dry sticks and branches of goodly size; the nest was rather a deep bowl—rather deeper, that is, than those of *G. bengalensis*; the sides, and especially the bottom, were of great thickness, and the diameter fully $2\frac{1}{2}$ feet: at that time the nest was not completed within. The branches with which the nest was constructed were not merely laid one upon another in simple platform fashion, but were strongly interwoven like loose basket-work. In the end of February the spot was again visited, and the nest was found to be finished, the lining being of somewhat finer sticks, with bits of rag and a few feathers apparently rubbed from the body of the bird, which had evidently been sitting on it; it was, however, still empty, and no bird was seen.

Mr. A. Anderson also records it as a cold-weather visitant, arriving in November, and leaving again in March for its breeding-haunts. Major Irby met with it in Kumaon. It has been noticed in Pekin and Mongolia by Père David, but was not met with by any of the Siberian travellers.

Mr. Swinhoe, writing from Ningpo, states that he procured this Vulture off one of the islands in the Chusan archipelago. The bird was a male; and a female, probably his mate, was shot off an island not far from the mouth of the Shanghai River. "The Chinese are not acquainted with this bird; they call it the *Hai Laoying*, or Sea Kite. We can find no word in Chinese to express 'Vulture,' a difficulty felt by the translators of the Bible."

In its habits the Cinereous Vulture resembles the Griffon; and both species often meet to banquet off some loathsome carcass. In Bulgaria they are very numerous; and Dresser has often seen large numbers of both species collected together where food was to be found. They are heavy and slow in their actions, although they can display considerable activity when busy tearing at a carcass and squabbling for their share of the repast. Mr. Farman found them somewhat shy, principally frequenting the wooded districts, and seldom venturing into the open country. They also appear to be of an unsociable disposition, seldom mixing with the other Vultures, except at their common feasts of carrion, when, indeed, they are all frequently to be seen amicably feeding together off the same carcass.

Until very lately it was supposed that this Vulture, like the Griffon, deposited a white egg on the cliffs; but later investigations have proved this to be erroneous, except perhaps in isolated cases, where, there being no trees within reach, the bird is compelled to deposit its egg on the rocks; for, according to the experience of Lord Lilford and Mr. Howard Saunders in Spain, and Mr. Farman and Messrs. Elwes and Buckley in Turkey, it invariably builds a large bulky nest, placed sometimes high and at others low in a tree, and deposits rarely more than one egg, which is as richly blotched with colour as the ordinary run of the eggs of the Golden Eagle, and sometimes as strongly marked as the eggs of the Egyptian Vulture. Two instances of this species having been found breeding, like the Griffon, on cliffs are on record—one by Canon Tristram (Ibis, 1865, p. 245), and the other by Messrs. Elwes and Buckley (Ibis, 1870, p. 63); but in both instances the eggs were white, which alone would lead us to receive the information with hesitation; for, out of considerably more than a hundred eggs of this species which we have examined, we have never yet met with a pure white specimen; and it would appear odd if this bird should, when depositing its egg, contrary to its usual custom, on a cliff, also produce an egg unlike those which are laid when it nests on a tree, but closely resembling the egg of the Griffon.

This species appears to breed somewhat earlier than the Griffon, as Mr. Farman found young birds at the same time that eggs he procured of the latter were quite fresh. Messrs. Elwes and Buckley describe the nest as being very bulky, composed of large boughs, and lined with small twigs and wool. Mr. Farman found it invariably on a tree, about twenty feet from the ground, and never saw more than one young bird or one egg in each nest. He considers that they return to the same nest year after year. We have received the following note on its breeding-habits from Mr. T. E. Buckley:—"The first nest we took was in Macedonia, on February 27th, out of a range of cliffs; it contained one round white egg, and that hard-set. This is the only occurrence of the Black Vulture building in a cliff that came under our immediate

notice; but near Varna we had two eggs brought to us which seemed to be of this species, and which the man who brought them said had been taken out of some rocks. In the Dobrudscha they are very common, and, though not building in colonies like the Griffon, we found four nests not more than 200 yards apart. Here, too, they were much later than in Macedonia, and we took all our eggs in April, and on no occasion did we find a young bird. In two instances we took two eggs out of a nest; but this is rare. The nest is of immense size, made of sticks, lined with dried grass, and but slightly hollowed; most of them were on small stunted trees; and the difficulty was, not to get up to them, but to get into them. The Black Vulture is by no means tame when sitting; and we only secured two, one of which measured about 10 feet from wing to wing."

This Vulture sometimes lays in confinement; and Mr. Benzon informs us that in the Zoological Gardens of Copenhagen a female has, from 1867 to 1871, annually deposited a single egg, four times in March and once in April.

Respecting a peculiar instance on record of this Vulture carrying off its young to protect them from harm, we give the following note communicated to us by Count von Tschusi Schmidthofen, and by him extracted from the 'Proceedings' of the Siebenbürg. Vers. für Naturwissenschaft in Herrmannstadt (Jahrg. 13, 1862), viz.:—"The Royal forester, A. Fikker, found in 1860 on the top of a giant beech in the valley of the Dobrabach, in the Sinnaer district, the nest of this Vulture. When the young birds were large enough to be able to save themselves as the tree fell, orders were given to cut the beech down. The wood-cutters had worked at the tree some time, when the old birds appeared, uttering loud cries, and suddenly pounced on the nest, caught hold of the young ones in their claws, and disappeared like lightning, carrying off the young (who loudly complained of the unusual mode of locomotion) before the gaze of the astonished spectators." From the above it seems that, if the facts (which appear well vouched for) are quite correct, the nest in question contained more than the usual single young bird; but, on the other hand, Mr. Buckley has found two eggs in the nest of this species.

In Dresser's collection are eleven eggs of this species, all from Spain, obtained early in April, and one from Bulgaria, obtained on the 23rd of April. All these eggs are richly marked with dark red, two so much so as almost to give the egg the appearance of being uniform dark red in colour. The one obtained in Bulgaria is least marked, but is quite as highly coloured as an average egg of the Golden Eagle. In size they vary from $3\frac{1}{40}$ by $2\frac{2}{40}$ inches to 4 inches by $2\frac{2}{40}$ inches.

The figure and the description of the adult bird are taken from a very fine old male in Dresser's collection. The young bird is described from a specimen in the British Museum.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a. Seville, Spain (*H. Saunders*).

E Mus. Brit. Reg.

a, b, c. Nepal (*B. H. Hodgson*). *d.* Xanthus (*Fellows*).

E Mus. A. B. Brooke.

a, ♂. Sardinia, April 11, 1871 (*A. B. B.*).

Genus NEOPHRON.

Vultur apud Linnæus, Syst. Nat. i. p. 121 (1766).
Neophron, Savigny, Syst. Ois. de l'Egypte, p. 8 (1810).
Cathartes apud Temminck, Man. d'Orn. p. 5 (1815).
Percnopterus apud Stephens in Shaw's Gen. Zool. xiii. pt. 2, p. 7 (1825).

This genus contains, according to Mr. Sharpe, four species, which inhabit the Palæarctic, Ethiopian, and Oriental Regions, only one species being found in the Western Palæarctic Region. In habits they resemble the Griffon and Cinereous Vultures, and are essentially carrion-eaters, devouring garbage of all sorts. They are gregarious, and nest also in colonies. They fly with ease, quartering the ground most carefully in search of food, but are heavy and inactive on the ground. They nest in cliffs, old buildings, and trees, building a heavy nest of sticks, grass, &c., which they line with rags, grass, or any soft rubbish they can collect together; and they deposit one or two white or ochreous eggs richly blotched with dark red.

Neophron percnopterus, the type of the genus, has the beak elongated, slender, encircled at the base by a naked cere which extends fully to the middle of the bill; ridge of the culmen rising slightly from the cere and then decurved; nostrils, which are in the anterior part of the cere, elongated, horizontal; under mandible shorter than the upper, and blunt; fore part of the head and throat bare of feathers; feathers on the occiput and back of the neck elongated, lanceolate; wings long, rather pointed, the first quill short, the third quill longest; tail moderate, much rounded, composed of fourteen feathers; feet rather short and stout, the tarsi reticulated; anterior toes united at the base; claws moderate, slightly curved.



W. Wolfenmans lith

Hanhart imp

EGYPTIAN VULTURE.

NEOPHRON PERCNOPTERUS.

NEOPHRON PERCNOPTERUS.

(EGYPTIAN VULTURE.)

Vultur fuscus, Briss. Orn. i. p. 455 (1760).
Vultur ægyptius, Briss. tom. cit. p. 457 (1760).
Vultur leucocephalos, Briss. tom. cit. p. 466 (1760).
Vultur percnopterus, Linn. Syst. Nat. i. p. 123 (1766).
Le Petit Vautour, Buff. Hist. Nat. Ois. i. p. 164 (1770).
Le Vautour, Buff. tom. cit. p. 167 (1770).
Le Sacre d'Egypte, Buff. tom. cit. p. 167 (1770).
Vultur fuscus, Bodd. Tabl. Pl. Enl. p. 25 (1783, ex D'Aubenton).
Vultur leucocephalos, Gmel. Syst. Nat. i. p. 248 (1788).
Vultur percnopterus, var. γ, *capensis*, Licht. Cat. Rer. Nat. Hamb. p. 2 (1793).
Vultur alimoch, Lapeyr. M. & Ois. de la H. Garonne, p. 10 (1799).
Vultur stercorarius, Lapeyr. ut suprà (1799).
L'Ouri-gourap, Levaill. Ois. d'Afr. i. p. 62, pl. 14 (1799).
Vultur albus, Daud. Traité d'Orn. ii. p. 21 (1800).
Neophron percnopterus (L.), Savigny, Syst. des Ois. de l'Egypte, p. 16 (1810).
Vultur meleagris, Pall. Zoogr. Rosso-As. i. p. 377 (1811).
Cathartes percnopterus (L.), Temm. Man. d'Orn. p. 5 (1815).
Cathartes meleagrides, Temm. Pl. Col. livr. 6, genre Catharte (1824).
Percnopterus ægyptiacus, Steph. in Shaw's Gen. Zool. xiii. pt. 2, p. 7 (1825).
Neophron ægyptiacus (Steph.), Smith, S.-Afr. Quart. Journ. i. p. 16 (1829).
Cathartes europæus, C. L. Brehm, Isis, 1840, p. 599.
Cathartes capensis, C. L. Brehm, ut suprà.

Vautour d'Egypte, French; *Alimocha*, *Aguila blanca*, *Abanto*, *Grajo blanco*, Spanish; *Capovaccajo*, Italian; *Aikla*, Maltese; *Rakhma*, Arabic; *Rekhama*, Moorish; *Ak-baba*, Turkish; *schmutziger Aasvogel*, German.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 427, 429; Werner, Atlas, *Rapaces*, pls. 3, 4; Naumann, Vög. Deutschl. taf. 3; Gould, B. of Eur. pl. 3; id. B. of G. Brit. i. pl. 1; Levaill. *l. c.*; Susemihl, Vög. Eur. taf. 4.

Ad. capite, collo, corpore suprà et subtùs cum caudâ et tectricibus alarum albis vix isabellino tinctis, plumis in collo postico et occipite elongatis et lanceolatis: capite antico et mento nudis: remigibus primariis nigricantibus, versus basin extùs griseo-cervino marginatis, secundariis fusco et cervino variegatis: caudâ graduatâ: rostro ad apicem nigro et ad basin cum parte capitis nudâ flavis: iride rubrâ: pedibus incarnatis, unguibus nigris.

Juv. ochraceo-cervinus, ubique nigro-fusco variegatus: colli plumis nigro-fuscis cervino fulvido apicatis: corpore subtùs saturatiùs nigro-fusco: parte capitis nudâ lividâ: rostro ad basin sordidè flavo-griseo: pedibus lividis: iride fuscâ.

Adult Female (Seville, March 1870). Head, neck, back, wing-coverts, rump, and underparts generally white, tinged with creamy buff; feathers on the occiput and back of the neck elongated, lanceolate, and tinged with buff; fore part of the head and throat bare; primaries blackish, with the base of the outer web margined with greyish buff; secondaries varied dark brown and buff; tail white, graduated: apical portion of the beak blackish, the basal portion and bare part of the head yellow; iris deep red; legs and feet dark flesh-colour, claws black. Total length about 26 inches, gape 2·32, wing 19·2, tail 10·0, tarsus 3·4.

Young (Seville). Plumage generally creamy buff blotched with dark brown; the neck blackish brown, the feathers tipped with creamy fulvous, the bare parts of the head with small blackish brown tufts scattered sparingly here and there; quills as in the adult, but more marked with greyish buff; tail warm buff and brown; bill dull yellowish at the base; bare portions of the head livid; iris brown; legs livid-greyish.

The Egyptian Vulture but rarely straggles above the southern portions of Central Europe; but it is common in the countries skirting the Mediterranean, and is to be met with as far south as the Cape of Good Hope. In Asia it appears to range as far east as India, where it meets a closely allied form, *Neophron ginginianus*.

The present species has been obtained at least twice in Great Britain:—once near Kilve, in Somersetshire, in October 1825 (this specimen, which was seen in company with another which escaped, being now in the possession of the Rev. John Matthew, of Kilve); and, according to Dr. Bree (Zool. 1868, p. 1456), a second example was shot at Peldon, in Essex, on the 28th September 1868. Buffon states (*l. c.*) that he received a specimen from Norway; but recent authors on the ornithology of Scandinavia do not include this species, and it seems highly probable that there was some mistake in the matter. It does not occur in North Germany, Holland, or Belgium. But in some parts of France it is tolerably numerous, as, for instance, in several portions of the Pyrenees, in the more elevated mountains of Provence, especially in the departments of Var and Basses Alpes; and it inhabits Isère, la Drôme, Hérault, Gard, Bouches du Rhône, and Ariége; and, according to the Abbé Vincelot, it is of occasional occurrence on passage in the department of Maine-et-Loire. In all these localities it is a summer visitant, arriving in April and leaving in the early autumn to winter in warmer latitudes; and the same may be said respecting its occurrence in Switzerland and Savoy, where, according to Bailly, it is by no means numerous. A few pairs breed on Mount Salève, near Geneva, which is said to be its most northerly nesting-place. It inhabits Portugal; but Dr. E. Rey informs me that he never met with it but in Algarve, and there only singly. Early in April he saw fledged young birds; and at the same time a pair were feeding their young, which were still in the nest.

It appears to be common in Spain; and Lord Lilford informs me, "This species is very abundant in Andalucia and throughout Central Spain, less so in the northern provinces; we observed it in Santander, Aragon, Navarre, and Cataluña, but did not meet with it in Guipuzcoa. It haunts the outskirts of towns and villages, and, besides feeding on carrion and garbage of all sorts, devours snakes and other small reptiles. It is often to be seen following the plough, and

is very tame and fearless." Mr. Saunders remarks (Ibis, 1871, p. 57) that during the breeding-season he never saw an immature bird in the mountains, nor amongst the hundreds which frequent the cattle-pens in the plains (called *rejiles*, whence its name *Rejilero*) did he ever find any but birds of the first or second year.

In Italy, according to Salvadori, the Egyptian Vulture is resident in the district of Nice, the Siennese Maremma, the Romagna, and in many parts of Sicily, in which island, however, Doderlein says, it generally occurs on passage, and is not common. Mr. C. A. Wright records it (Ibis, 1864, p. 44) as a rare and accidental visitor to Malta, and adds that a specimen in his collection was killed on the east coast of that island on the 30th September 1861. It proved to be a female, and appeared to be a bird of the year.

In Greece, according to Lindermayer and Von der Mühle, it is tolerably numerous, arriving about the end of April (old style) in the northern portion of the country, remaining there to breed, and leaving again about the middle of September. Dr. Krüper, however, remarks (J. f. O. 1862, p. 361) that it always arrives a month earlier than the Cuckoo, usually appearing in the Parnassus from the 19th to the 27th March. Lord Lilford writes (Ibis, 1860, p. 2), it is "very common in summer on the mainland. A pair bred in 1857 in a low sea-cliff near Ptelia, about seven miles from Corfu, across the channel which separates the island from Albania, or more properly Epirus. I have been assured that it also breeds on San Salvador, in the island of Corfu. The first I recognized was near Prevesa, in the Gulf of Arta, on the 15th of March, 1857. I have never observed them later than the beginning of September, and I never saw a specimen except in the white adult plumage."

In Southern Germany this Vulture is rare. Von Pelzeln states that there is a specimen in the Vienna Museum from Dalmatia. It occurs sometimes in the Banat; but, as the Ritter von Tschusi-Schmidhofen informs me, is one of the rarer birds of that district. He further states, however (J. f. O. 1874, p. 340), that it is more frequent in Southern Hungary, as Von Hermann saw three individuals feasting on a carcass near Bazias on the 12th June. It is certainly found in tolerable abundance in Wallachia; for I frequently observed individuals quartering the ground in search of food when travelling near Orsova, and further in the interior of the country, and noticed it also on several occasions in the mountains of Servia. I may further add that Messrs. Danford and Harvie-Brown record (Ibis, 1875, p. 291) that in Transylvania it is "very rare, but has been occasionally seen in the lowlands in autumn; and the young have, according to Herr Buda Ádám, been brought from the mountains near Hátzeg. Herr Buda Elek came across one on the carcass of a sheep at Russ; and in 1860 Herr Buda Ádám saw one on the banks of the Strell. Both these observations were made in summer." Mr. C. Farman, who met with it in Bulgaria, writes (Ibis, 1868, p. 409):—"In the Pravidy valley, the neighbourhood of Shumla, and wherever the hills show a broken face of rock, there I found this Vulture pretty abundant; but in the open country and wooded district, although occasionally to be met with, it is comparatively scarce. It arrives here early in March, leaving again about the end of October. Nidification commences somewhat later than with *Gyps fulvus*, and not much before the beginning of April, as a rule, but varies slightly with the season. In confinement I found this a very dull and sheepish sort of a bird." Mr. E. C. Taylor says that it is abundant in and about Constantinople in spring and summer, and breeds on the ruined walls and towers of Stamboul.

Acccording to Professor Nordmann it is sedentary in the southern parts of Russia, but nowhere numerous. It inhabits the mountainous districts, descending into the plains during very severe seasons. In Asia Minor, according to Dr. Krüper (J. f. O. 1869, p. 22), "it is not uncommon near Smyrna, especially in localities which are not far distant from its breeding-haunts. When travelling by rail last May I noticed, a little beyond Kaias, a large flock of these Vultures in company with individuals of *Vultur fulvus* feeding on the carcass of an ox. It arrives in the vicinity of Smyrna in March; this year I observed the first on the 12th of that month, and last year on the 25th. On the 5th June last year I found a nest near Burnova containing young birds only a few days old; but this year the nest was not tenanted."

In Palestine, Canon Tristram writes (Ibis, 1865, p. 249), "It never breeds in colonies, and seldom are two nests to be found very near together; but it is the most universally diffused of all the Raptores of Palestine during summer, it being impossible in any part of the country to travel a mile or two without putting up a pair. It has no dislike to the neighbourhood of man, and fearlessly resorts to the dunghills of the villages to feed. No filth, vegetable or animal, seems to come amiss to it; and I once surprised a pair in the act of gorging at a heap of spoilt figs. The *Neophron* is strictly migratory, and begins to return about the end of March; and by the middle of April the country is full of them. The first egg we obtained was laid near the plain of Gennesaret on April 1st; and our last pair of *fresh eggs* were found on May 24th, in the mountainous region near Hermon. The nests, though always in the cliffs, were generally low down, and comparatively easy of access, in this respect differing very decidedly from the Griffon's. I took an egg from one nest in an arched passage through the rocks, close to the village of Mejdel, and so little concealed that every passer-by could see it; and a child might have climbed up to it. On the whole, it appears to be more prolific in Palestine than in North Africa; for while in the Atlas a single egg was the frequent complement, out of upwards of fifty nests which we took in this expedition I do not remember one in which the bird was actually sitting on a solitary egg. Yet in no instance did we find more than a pair of eggs." According to Captain Clark Kennedy (Ibis, 1874, p. 110), this Vulture is "one of the commonest of birds in the Sinaitic desert, and almost as numerous in some places here as in Egypt itself. Around the convent of Sinai there were a great many of them; and we met it far north in Palestine; but it seemed to become scarcer as we worked northwards from Jerusalem. Wherever we pitched our tents in the desert, whether on a sandy plain or almost hidden among those towering mountains, an assemblage of Egyptian Vultures were certain to be the first living things we saw in the early morning, and the last birds to take leave of us at night."

In North-east Africa this Vulture is extremely abundant, breeding among the lofty crags along the banks of the Nile. Mr. Blanford found it numerous everywhere in Abyssinia, from the sea-level up to 10,000 feet, and equally so near the camps on the Wadela plateau and on the shores of Annesley Bay. According to Finsch and Hartlaub it is but rare in that portion of Africa which their work embraces. Kirk saw it once on Lake Nyassa, and Von der Decken at Zanzibar. Heuglin also speaks of it as being less numerous than *Neophron pileatus* on the Danakil and Somali coasts; and Brehm assures us that in the highlands of Abyssinia it is as one to fifty compared with *Neophron pileatus*. Loche remarks that in Algeria, though very common, it never occurs in large flocks, but is always seen singly or in pairs; and Mr. Salvin says (Ibis,

1859, p. 180):—"Though at first sight this bird would appear to be hardly so numerous as *Gyps fulvus*, yet its distribution is so much more extensive that I am inclined to consider it as more abundant. It is to be seen usually in pairs; and wherever a cliff exists in the mountains that surround the tablelands of the Eastern Atlas, sure enough it will be occupied by a pair. It was about the 20th of March when, riding from Tunis to Bizerta, I first saw this species, after which this bird and the Black Kite (*Milvus ater*) were our constant companions throughout our stay. Generally speaking, the nests of *Neophron percnopterus* are not so inaccessible as those of *Gyps fulvus*. One nest which I visited near Kef Laks, and from which an Arab had taken the egg and broken it, I could reach with my hand from a perfectly accessible ledge. This nest was in a crevice of the rock, and was composed entirely of small sticks." M. Favier writes that it "appears near Tangier in flocks during migration, some remaining to nest in the vicinity, awaiting the return of the autumnal migration, to winter probably in the interior of Africa. Those which pass over to Europe cross from February to April, returning in August and September. They nest on rocks in April, generally laying two eggs, sometimes only one. These have a rough surface, and vary in shape. Sometimes there is an interval of two or three days in the hatching of eggs in the same nest."

The Egyptian Vulture inhabits the Canaries, Madeira, and the Cape-Verd Islands. According to Mr. F. DuCane Godman (Ibis, 1872, p. 164), it is "common in all the Canarian group, where some few pairs may usually be seen flying over the towns or large villages at a considerable height. I once saw fourteen together near Laguna, in Teneriffe, feeding on the carcass of a dead animal; they were so gorged that they took but little notice of me, and allowed me to approach quite close before they flew off. They breed in the rocks in the mountains of Teneriffe, and most probably also on the other islands of the Canarian group. I have a fine-coloured egg taken from a nest in a ravine near Chasna in the highland of Teneriffe; it was brought me by a countryman, and was quite fresh. He told me that he saw the old bird fly from the nest, which he said was quite low down the cliff and easy of access. Vernon Harcourt mentions this Vulture as occurring occasionally in Madeira. I never heard of it in the Azores, nor do I believe it ever occurs there." Dr. Carl Bolle speaks of it as being exceedingly abundant in the Cape-Verd Islands; but, strange to say, Dr. Dohrn only twice met with it there, and Keulemans does not appear to have observed it. It does not seem to occur on the Gold Coast; but according to Andersson (B. of Damara Land, p. 1), it is "not uncommon in Damara Land and Great Namaqua Land and the parts adjacent, more especially in the neighbourhood of the coast. It is usually found in pairs, and is a regular scavenger, being generally seen in search of the filthiest food." Near the Cape-town end of the Cape colony, Mr. E. L. Layard writes (B. of S. Afr. p. 3), it is "decidedly a scarce species; but few specimens have reached my hands. I saw a single bird feeding on a dead horse, off which it drove three hungry White-necked Crows (*Corvus vulturinus*) not far from the Paarl. It is very abundant at the Cape-Verd Islands, breeding in the rocky precipices in St. Vincent's, at the back of the town, off which the steamers lie to coal. I ascended to their nests, which were vast masses of sticks; but was, I believe, too late (December) for their eggs. I have never heard of any instance of the bird breeding in South Africa. It may do so, however; and its nest should be sought in the mountain-ranges about Beaufort West and the Zwartberg, where I saw it not unfrequently during my visit to those localities." Mr. Ayres

obtained one in Natal, where it is of very rare occurrence; and Mr. T. E. Buckley saw a few in the Matabili country.

It is somewhat difficult to define the eastern limit of its range in Asia, as it has been much confused with its near ally, *Neophron ginginianus*; but it probably ranges into Western India. Mr. J. H. Gurney records it from Beyrout, Dr. Severtzoff from Turkestan; and, according to Mr. Blanford (E. Persia, ii. p. 101), it is "found throughout Persia, increasing in abundance to the south. In Northern Persia generally it is not very common, and it is somewhat locally distributed; thus De Filippi speaks of it as common in the Caucasus and Ghílán, rare south of the Elburz Mountains. Ménétriés noticed it at Bákú on the Caspian, but not further to the north." The Indian bird (*Neophron ginginianus*, Lath.) differs in being smaller in size, in having the apical portion of the bill pure yellowish flesh-colour instead of blackish, and the points of the closed wing only just reaching to the tip of the tail; according to Mr. Hume, it has also a conspicuous fold of skin continued from beneath the ear to the throat underneath, which is little more than indicated in *Neophron percnopterus*; and the throat is quite bare, instead of being thinly clad with short white feathers as in the latter species.

Although by no means an interesting or pleasing bird in its general habits, for it is, to say the best of it, but a filthy carrion-eating species, yet in the southern climes, where it is most numerous, this Vulture is extremely useful as a scavenger; for it most effectually clears away any garbage that it can possibly devour. In its general appearance it is a heavy, rather solemn-looking bird, and may usually be seen either seated quietly digesting its last meal, or else carefully quartering the ground in search of any thing that may turn up. In the vicinity of a slaughter-house, or wherever any offal is regularly cast out, these birds will hang about waiting for a meal; and should a beast fall down and be left to die, the Vultures are sure to appear even before the breath is out of its body, and soon leave nothing but the bare bones. I have never seen it in flocks, except when collected on a carcass, but usually singly or in pairs; and it is said to breed in scattered pairs and not in communities, although the nests are frequently not far apart. Its nest is placed in a cliff or an old building, less seldom in a tree, and is rather a heavy structure of sticks and rubbish lined with grass and cotton rags, or any soft materials it can most readily meet with; and occasionally, when it has been able to collect together a fair assortment of rags, its nest presents quite a gaudy appearance. The eggs, one or two in number, are frequently very richly coloured, being spotted or blotched, on a white or ochreous ground, with deep red or fox-red. One in my collection is white with only a few dull-red blotches at one end; and several others are so closely marked with deep rusty red, on a rusty ochreous ground, as to leave very little of the latter exposed to view. In size those I possess vary from $2\frac{2}{40}$ by $1\frac{38}{40}$ to $2\frac{2}{40}$ by $2\frac{7}{40}$ inches. The shell is somewhat chalky, and usually quite devoid of gloss. In a letter from Dr. E. Rey this gentleman remarks:—"I have eggs, or have had them through my hands, from Portugal, Spain, Southern France, South Italy, Greece, Turkey, Asia Minor, Egypt, and Nubia; and on one collected by Dr. Krüper in Greece the date 24th May is written. Thirty-one eggs that I have measured average in size 66·1 by 50·0 millims., the largest measuring 74·5 by 52·5 and 70·5 by 54·0, and the smallest 59·0 by 49·0 and 64·0 by 43·0 millims. respectively; one, probably an abnormal specimen, measures 56·0 by 48·0 millims."

As above stated, the Egyptian Vulture feeds on carrion and offal; and it is said to have a

partiality for human excrement; but, should there not be a sufficient supply of garbage, it will feed on lizards, snakes, frogs, insects of various kinds, worms, and slugs. Its flight is tolerably easy, though slow; and at a distance, on the wing, it reminds one much of a Raven. It walks leisurely, with ease, lifting its feet rather high as it stalks along; and it can even run with tolerable facility. When wounded it vomits up the horrible filth on which it has been feeding; and when irritated it will utter a harsh croak, which is the only sound I have heard it emit. It lives quite contentedly in confinement; and Lord Lilford informs me that those he has kept were always very quiet and peaceably disposed towards other raptorial birds in the same division of his aviary.

The specimens figured are the adult and young birds above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Seville, Spain, March 1870. *c*, *juv.* Seville (*Ruiz*). *d*, ♂ *ad.* Anascha, Taurus, April 10th, 1876 (*C. G. Danford*).

E Mus. Norv.

a, *ad.* S. France (*Parzudaki*). *b*, *juv.* Spain. *c*, *juv.* Italy (*Parzudaki*). *d*, ♀ *ad.* Tangier (*Favier*). *e*, *ad.* Kordofan (*Murray*). *f*, *ad.* Natal (*Ayres*). *g*, *ad.* St. Vincent, Cape-Verd Islands (*Bouvier*).

E Mus. H. B. Tristram.

a, ♂, *b*, ♂. Jericho, March 1858 (*H. B. T.*).

Genus GYPAËTUS.

Vultur apud Brisson, Orn. vi. App. p. 26 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 123 (1766).
Gypaëtus, Storr, Alpenreise, p. 69 (1784).
Gyptus apud Duméril, Zool. Anal. p. 34 (1806).
Phene apud Vieillot, Faun. Franç. p. 5 (1820).

Mr. Sharpe removes the present genus from the Vulturidæ and includes it in the Falconidæ, because the head is covered with true feathers instead of being naked or covered with down; but I have deemed it best to retain it amongst the Vulturidæ, as belonging more naturally to that family. Only two species belong to this genus, one of which is found in the Western Palæarctic Region. These birds inhabit certain of the mountain-ranges of the Palæarctic and Ethiopian Regions, not being found in the Eastern Palæarctic Region south of the Himalayas. They are essentially inhabitants of the higher mountain-ranges, are solitary in their habits; and though they are by some authors said to be bold and rapacious, they resemble the true Vultures more than the Eagles, feed on carrion and refuse of various kinds, and are, as a rule, cowardly and tolerably inoffensive. Their cry is feeble and querulous, and they are rather silent than otherwise. Their flight is strong and tolerably swift, and they often sail in circles at great altitudes in search of food. They nest in precipices, making a bulky nest of sticks lined with wool or some soft material, and deposit two yellowish-orange eggs, which are somewhat small for the size of the bird.

Gypaëtus barbatus, the type of the genus, has the bill straight to the nostrils, where the culmen rises and is arched, the bill ending in a strong hook; basal portion of the bill covered with strong bristles, which conceal the nostrils; on the chin, at the base of the lower mandible, is a tuft of bristles; head covered with feathers; wings long, broad, the first quill shorter than the fifth, the third longest; tail long, graduated; tarsus feathered to the toes; feet strong, the toes covered with reticulated scales; claws moderately arched, rather blunt, but stout and strong.



BEARDED VULTURE.

GYPAETUS BARBATUS.



BEARDED VULTURE.

GYPAETUS BARBATUS

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BEARDED VULTURE.

GYPAETUS BARBATUS.

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(BEARDED VULTURE.)

Vultur aureus, Aldrov. Orn. iii. p. 277 (1599).
The Bearded Vulture, Edwards, Nat. Hist. Birds, iii. p. 106 (1751).
Falco magnus, J. G. Gmelin, Reise d. Sibir. iii. p. 365, pl. 38 (1751).
Vultur barbatus, Briss. Orn. vi. App. p. 26 (1760).
Vultur alpinus, Briss. op. cit. i. p. 464 (1760).
Vultur niger, Briss. tom. cit. p. 457 (1760).
Falco barbatus, Linn. Syst. Nat. i. p. 123. no. 6 (1776).
Falco barbarus, Gm. Syst. Nat. i. p. 250. no. 13 (1788).
Falco barbatus, Gm. tom. cit. p. 252. no. 35 (1788).
Gypaetus grandis, Storr, Alpenreise, i. p. 69 (1784).
Gypaetus barbatus (Linn.), Storr, loc. cit.
Gypaetus alpinus (Briss.), Daud. Tr. ii. p. 25 (1800).
Gypaetus aureus (Ray), Daud. loc. cit. (1800).
Gypaetus castaneus, Daud. tom. cit. p. 26 (1800).
Le Gypaète des Alpes, Sonnini, Hist. Nat. Ois. ii. p. 214, pl. 12. fig. 2 (1801).
Vultur leucocephalus, Meyer, Taschenb. deutsch. Vogelk. i. p. 9, pl. 3 (1809).
Gypaetus melanocephalus, Meyer, tom. cit. p. 10.
Phene ossifraga, Savign., Vieillot, Faun. Franç. p. 5, nec Savign. (1820).
Gypaetus hemachalanus, Hutton, J. As. Soc. Beng. vii. p. 22 (1838).
Gypaetus altaicus, Gebler, Bull. Soc. Acad. St. Pétersb. vi. p. 292 (1840).
Gypaetus barbatus occidentalis, Schlegel, Rev. Crit. p. 13 (1844).
Gypaetus occidentalis (Schl.), Bp. Compt. Rend. xxx. p. 294 (1850).
Gypaetus orientalis (Bp.), Blyth, Ibis, 1863, p. 25 (lapsu cal.).

Gypaète des Alpes, French; *Alpen-Bartgeier*, German; *Quebranta huesos*, Spanish; *Barbadu*, *Ingurtossi*, Italian; *Boulachiah*, Arabic.

Figuræ notabiles.

Edw. tom. cit. pl. 106; Temm. Pl. Col. 431; Naum. Vög. Deutschl. taf. 4, 5; Gould, B. of Eur. pl. 4; Bree, Birds of Eur. p. 12; Werner, Atlas, *Rapaces*, pls. 7, 8; Wolf, Abbildgn. u. Beschreibgn. merkwürd. nat. Gegenst. pl. 15; Vieill. Galerie, pl. 8; Schl. et Susemihl, tab. 5, 6; Gray, Gen. B. i. pl. 1.

♂ *ad.* pileo albicante, nuchâ ferrugineo lavatâ: naribus setis nigris obtectis: fasciâ latâ superciliari et plumis paucis verticalibus nigris: dorso toto nigricante, plumis omnibus medialiter fulvescentibus, scapis albis, tectricibus alarum clariùs cinerascente lavatis: remigibus brunneis, primariis extùs cinerascentibus, scapis pallidè flavicantibus, secundariis cineraceis, extùs nigricante limbatis, scapis albis: rectricibus

pallidè brunneis, scapis albis, exterioribus cinerascentibus brunneo marginatis: facie laterali albidâ, genis nigro minutè notatis, fasciam subauricularem vix formantibus: fasciâ mentali pilosâ nigrâ: corpore reliquo subtùs et collo laterali lætissimè ochrascenti-ferrugineis, plumis paucis albidis variis: subalaribus brunneis, cinerascente lavatis, medialiter fulvescente lineatis et terminatis: rostro cyanescenti-corneo: pedibus plumbeis: iride aurantiacâ.

Juv. brunneus: dorsi plumis paucis nigricantibus aut brunneis lactescenti-albo medialiter notatis: tectricibus alarum albido variis: pileo undique nigricanti-brunneo paullò fulvescente vario: corpore reliquo subtùs fulvescente, pallidè ferrugineo lavato.

Pull. lanugine cinerascenti-fuliginosâ indutus, plumis incipientibus purpurascenti-brunneis, fulvido medialiter lineatis, versùs apicem dilatatis: pectoris plumis latè apicaliter albidis.

Adult Male (Sierra de Huetor, Granada, 1870). Crown of the head and neck creamy white, washed with rust-colour; the thick, strong bristles covering the nostrils, lores, and a broad line passing over and round the eye, almost joined at the back of the crown, jet black; below the eye, and on the auriculars, a few black feathers are scattered, forming an irregular line; back and scapulars blackish grey, with a metallic gloss, shafts white, most of the feathers having a narrow central yellow line, giving the upper parts a lineated appearance; lower part of the back and upper tail-coverts similar to the upper part of the back, but lacking the light central line; quills dark blackish-grey, washed with slate-grey, the shafts of the feathers being white; secondaries washed with brown; larger coverts dark grey, edged with blackish, median and lesser coverts blackish grey, with a central yellowish or rufous line, broadening towards the tip; tail wedge-shaped, dark slate-grey, edged with blackish brown, the central feathers washed with brown; on the chin a bunch of black bristles; throat, neck, and rest of the underparts rich light rusty-yellow, darkest on the throat and neck, which are washed with rust-colour; under wing-coverts blackish grey, with a central line and spot at the tip yellowish rust-coloured; under tail-coverts rusty yellow; bill bluish horn-colour, darker at tip; iris pale orange; sclerotic membrane blood-red; feet lead-colour, claws pale horn. Total length 43 inches, wing 31, tail 20, tarsus 4·1, culmen 3·8, height of bill at base 1·5.

Young Female (Granada, March 1870). Head and neck covered with lanceolate blackish-brown feathers, intermixed with a few of a rufous colour behind the eye; lower part of the nape and fore part of the back particoloured, some of the feathers being blackish brown, with a sandy-brown spot at the tip, others, of two shades of brown, much lighter towards the tip; scapulars similar to the back, lower part of the back and upper tail-coverts earth-brown, most of the feathers with a lighter tip, and here and there a dull buffy-brown feather amongst the others; quills dark blackish-brown; secondaries rather lighter, and having the outer web light buff at the base, innermost secondaries washed with grey down the centre; larger coverts dull brown, very much worn, median and lesser coverts similar to the back, but more intermixed with feathers broadly terminated with whitish buff; tail dark brown, the central feathers very much worn and bleached; nostrils covered with stiff blackish-brown bristles; on the chin a short black tuft of bristles; throat, sides of the head, and neck blackish brown, the feathers here and there having a rufous central line towards the tip; breast and rest of the underparts dull rufous buff, darkest on the fore part of the breast, being there washed with rusty red; under wing-coverts dull earth-brown, tipped with buffy white; under tail-coverts dull brownish-buff; iris hazel-brown; legs and feet dull lead-colour, claws black; beak dull horn-colour. Total length 43·5 inches, wing 31·0, tail 21·0, tarsus 3·8, culmen 4·2, height of bill at base 1·6.

Young just emerging from down (Gaitanes, Spain, 4th May). Covered entirely with dull sooty-grey down, washed here and there with yellowish buff, very close in texture; on the back, especially at the lower

end, a few blackish-brown feathers, some tipped with dull buffy-brown, are appearing; wings and tail just appearing, the feathers on the latter being about five inches long; quills of wing and tail blackish brown; wing-coverts with a large, dull, light brown spot on the terminal part of the feathers; on each side of the abdomen a line of dark brown feathers, tipped broadly with buffy white.

Nestling (Sardinia, 18th April). Covered entirely with dull, sooty, yellowish-buff down, tinged with sooty grey on the head and neck, and with pale rusty yellow on the sides of the rump; a few dark brown feathers just appearing on the wings; and on the part where the tail grows a small bunch of dull brown downy feathers just showing.

The Bearded Vulture is found only in the high mountain-ranges of the Pyrenees and Alps, in Africa only in the Atlas range, and eastward extends to India, where it occurs in the North-western Himalayas; and it has likewise been met with in China.

In Portugal it has not been recorded by Professor Barboza du Bocage, and the Rev. A. C. Smith did not meet with it; but Dr. Rey informs us that it breeds not uncommonly in that country. In Spain it is probably more numerous than in any other country in Europe, not having been so much molested there as in Switzerland. Lord Lilford and Mr. Howard Saunders both record its occurrence in Spain; and the former writes to us as follows:—"Since writing the papers on Spanish ornithology (Ibis, 2nd series, vols. i. & ii.), in which I make mention of this bird, I have met with it in a very different part of the country, viz. Navarra and Aragon. In the former province there is an eyry of this bird in one of the stupendous crags known as Las Dos Hermanas, at the entrance of a gorge of the Lower Pyrenees, some miles to the westward of Pamplona. We visited this locality in May 1867, when the young bird had left the nest, as we were informed, more than three months previously; but we had a good view of one of the parent birds, a splendid specimen, with deep rufous breast and neck, sailing round the crags with wings outstretched and motionless, in strong contrast to some thirty or forty Griffon Vultures, which flapped heavily from one ledge to another; I heard on good authority that this nest was harried several times by the late Captain Loche, but that a pair of Lämmergeyers continued to nest every year almost in the same spot—as far as I could make out, a small cavern about a third of the height of the southern face of the eastern crag from its summit. The people of the village below assured us that the birds had bred there from time immemorial, that they did no harm, *i. e.* never carried off lambs, kids, or fowls, and only fed on dead beasts with the Vultures; they distinguished this species as 'Grifo,' by which name I found it was also known throughout the province of Aragon, where I saw it on several occasions. I imagine that the Lämmergeyer seldom leaves the vicinity of the hills, though I know of one or two instances to the contrary, *e. g.* a fine specimen killed close to the city of Valencia, which I saw in the Museum there. I imagine that in the Alps of Switzerland, Savoy, and Northern Italy any bird of prey is pointed out by the guides to tourists as 'Le Gypaète,' as I have been several times assured of the abundance of this bird in some localities of the above-named countries where a genuine *Gypaetus* would in fact 'astonish the natives' as much as a comet. I did, however, meet with this bird in the Italian Alps, not far from Aosta, in 1858."

In France the Bearded Vulture is found only in those parts bordering on the Swiss Alps, where it is found still, though it will ere long, we fear, be extinct there also. A most exhaustive

history of this species in Switzerland has been written by Dr. A. Girtanner (Verh. St. Gall. naturwiss. Gesellschaft, 1869, 1870); and from that we extract the following particulars. From the earliest times the northern spurs of the Swiss Alps have probably been the most northern home of the Bearded Vulture. The cantons of Thurgau, Schaffhausen, Zürich, Aargau, Solothurn, and Basel being further distant from those ranges, and containing less highlands than the true Alpine territory, have probably never been regularly inhabited by this species, nor does it appear to have inhabited the heights of the Jura or the Jorat. In many cantons it was formerly a resident, but is now no more so. It there inhabited the wildest Alpine regions, and was found in the Tessiner-, Walliser-, and Berner-Alps, especially, however, the vast regions of the Bündner Alps. It is certain that it has not been found as a resident in Appenzell or the Säntisstock in the present century; and since the specimen in Dr. Schläpfer's collection in Trogen was attacked by moth and thrown away there is no example in this canton. It long inhabited the canton of St. Gallen, especially the Kurfirsten range, where are several breeding-places of which it obstinately held possession; but these localities now know it no more, the last one having long disappeared. In 1825, however, a reward was paid for one killed by a hunter from Sax. Nor does it now inhabit the canton of Glarus; and for long none have been obtained in the canton of Schwyz.

Of all the cantons there remain but three where this magnificent Vulture still occurs. These are (besides Wallis) those which contain the most inaccessible mountains, Bern, Tessin, and Graubünden, but only in the last is it now known to breed. It was observed in Bern and Tessin in 1870 during the breeding-season; and as it rarely wanders far from its breeding-place, it probably bred there.

According to information obtained from Saratz, there are but two nesting-places in Oberengadin, one in the Camogasker Valley, in an inaccessible precipice; and here the bird has bred but three times during the last fifteen years. The second nest is also in a steep precipice. Another nest, occasionally occupied, is in the rocks at Guardaval; Manni refers to two other nesting-places; and Saratz thinks there is another in the valleys of Calanca and Misox. Dr. Girtanner gives a table showing all the specimens now in the various museums in Switzerland, forty-eight in number, of which two are in the canton of St. Gallen, one in Thurgau, eleven in Zürich, three in Aargau, two in Basel, six in Bern, two in Lucerne, one in Wallis, eight in Neuenburg, two in Waadt, four in Geneva, four in Tessin, and two in Graubünden. Salvadori says that this species is becoming rare in the Italian Alps; but in Sardinia it continues to be tolerably common. According to Doderlein it is a resident in the mountainous districts of the interior of Sicily, especially about Nebrodi; and the Palermo Museum contains several specimens.

The Sardinian bird has been described as a distinct species, differing in being less in size, and much brighter in colour. These differences were first pointed out by Küster (Isis, 1835, p. 209), who stated that the Sardinian as also the Pyrenean Bearded Vultures differ from the Alpine species; and the same remarks were made by Schlegel and Susemihl, who figured the Sardinian bird. Professor Schlegel, who described the Sardinian bird under the name of *Gypaetus occidentalis* as a distinct species in 1844, appears to have abandoned the idea that there are two species of Bearded Vultures in Europe, as in 1862 (Mus. Pays-Bas, *Vult.* p. 10) he refers only to *Gypaetus barbatus*; and we are likewise of opinion that *Gypaetus occidentalis* must sink into a

synonym of *G. barbatus*. Küster (*loc. cit.*) gives the measurements as follows—total length 3 feet 10 inches, culmen 3 inches, tail $18\frac{3}{4}$ inches; Schlegel and Susemihl, as total length 43 inches, wing 30, tail 18 inches; and Count Salvadori, who refers to the Sardinian bird as *G. occidentalis* (Cab. Journ. 1865, p. 58), also gives the measurements, as follows—total length about 4 (?) metres, wing 30·7 to 32·3 inches, tail 22·9 to 23·6, tarsus 3·2 to 3·4, middle toe without claw 3·6, gape 4·0 inches. These measurements were given in French centimetres; but in order to enable our readers to compare them with the others, we have reduced them to English inches. We may remark that none of the authors above referred to states whether the measurements were taken from males or females, which makes the matter still more obscure than it otherwise would be.

Lord Lilford, referring to the Sardinian bird, writes as follows:—"From my further acquaintance with this bird in Spain and Sardinia, I am more than ever convinced that there is a hitherto (as far as I know) undescribed race or species of this genus to be met with in Epirus (*vid.* Ibis, O. S. vol. ii. p. 3). The first two birds there mentioned were, roughly speaking, not half the size of an ordinary Spanish Lämmergeyer." Lindermayer writes that "it is to be found on all the mountains of the Peloponnesus and Northern Greece, as also on the large island of Eubœa, but does not seem to occur on the other islands, as Dr. Erhard does not refer to it. Count von der Mühle found it on the Taygetus, in the Southern Peloponnesus, at Corinth, and in Northern Greece at Lamia. I found it common in Attica and on Eubœa. It is resident, and builds its nest in January, when the mountain-tops where it breeds are still covered with snow." Mr. W. H. Hudleston, in his notes on the ornithology of Greece, writes that "the Lämmergeyer (*Gypaetus barbatus*) is not numerous. Only one pair was actually recognized, though a single adult bird was occasionally observed in the Grand Gorge, where, amongst the holes in an upper tier of cliffs, he may have had an eyry. This is decidedly a scarce bird throughout Western Greece: in all the Raptorial districts I have visited, its proportion to *V. fulvus* is very small indeed; yet wherever there is any large colony of the latter a pair of *G. barbatus* may be looked for, and generally in the deepest hole on the shady side of the most inaccessible rock." Messrs. Elwes and Buckley write that they "only observed this bird in the mountains of Macedonia, where it seemed not to be uncommon; but as the females were probably sitting at this time, they were not seen very often. We never discovered the whereabouts of their eyries; but the shepherds say that they are very destructive to the young lambs and kids. In the Museum at Athens there are some very fine specimens obtained on Mount Parnassus."

Naumann says that in Germany "it is one of the rarest birds, and only occurs on the highest mountains in Suabia and Salzburg, as on the Benediktbaiern, Hohenschwangau Ettal, and in the Joch pass in the Tyrol;" and with regard to its occurrence in Austria and the Austrian Tyrol, we have received a most careful account from the Ritter von Tschusi Schmidthofen, which we translate as follows:—"In former years the Bearded Vulture was by no means rare in our Alpine regions, but now it has become almost extinct; and with its extinction its name has been transferred to the Golden Eagle, which in the mountains is usually called *Lämmergeier*. In 1810 a male and a female were killed near Innsbruck; according to Bruhin it is by no means rare (!) in the Vorarlberg, and is *said* on the Iffer, on the borders of the Bavarian Algau, to commit considerable depredations amongst the flocks which pasture there during the summer. I will not

assert that the Golden Eagle has been mistaken in this instance for the present species, but think that it is probable, as it is said to be *not uncommon*. An old male was shot at Gastein in 1843, and is now in the St. Peter's collection at Salzburg. According to information received from the forester Koralek, a pair nested in 1835 on the Styrian frontier, on the Röllberg, which reaches an altitude of 7237 feet. The nest was placed in an inaccessible precipice, about two thirds up the mountain, and contained two young. When the young birds were able to fly, they and the old ones left the neighbourhood. The male and female which are in the Kremsmünster collection were shot at different times in the ravines of the Tiessenbach, at Scharnstein, in Upper Austria. When the female was shot she was found to contain two eggs, and was accompanied by another, probably her mate, which escaped. In the Imperial collection at Vienna are two specimens, an adult and an immature male, from Styria, procured in 1809 by Von Wittmannstätten. According to Von Hueber the Bearded Vulture was observed not uncommonly in the mountains of Oberkärnten; but this statement requires confirmation. One, however, was procured some years ago on the Grevenze. In Siebenbürgen alone of all parts of Austria it still occurs, though rarely. According to Steller it inhabits there the Retyerzóit, in the Hatziger valley; and Kornhuber states that is not rare (?) from Harlagia and Kelemen to Ruska, and especially from Arpasch to Relyezát. Count Lazár obtained an old male in March 1861, which was shot in the district of Vajdejer, near Broos, in the high land a few miles from the mountains. In 1869 Hermann met with it several times in the eastern Alps of Siebenbürgen, and he states that a pair inhabited almost every mountain."

It still inhabits the Caucasus, where, however, it is rare, as almost everywhere else. Our friend Dr. Gustaf Radde, who was lately in England, informs us that the bird found there is the true *G. barbatus*; and he brought with him a photograph of a young bird procured in the Caucasus, and now in the Tiflis Museum. Von Nordmann also states that "it inhabits the high mountains of the Caucasus, Elbrouz and Kazbeck, and wherever the chamois and wild goat are found. In Abasia it is only found in the interior, near the summit of Mount Hirtscha, whence it rarely descends to the plains."

Dr. Krüper met with it in Asia Minor; and Canon Tristram writes respecting its occurrence in Palestine as follows:—"Heads the list of Palestine Raptorials. I do not think that we accumulated any new facts respecting the economy of the Lämmergeyer, though our observations corroborated facts previously ascertained. Although looked upon as especially a mountain-bird, ranging from the Pyrenees and Western Atlas to the Himalayas, and in all its habitats a constant resident, it would seem to be the conformation of the mountains rather than the temperature which attracts it; for it may be found at all times of the year in the tremendous gorges which flank the deep and sultry Jordan valley. Unlike the Vultures, it is always a solitary bird—neither gregarious, as *Gyps fulvus*, nor sociable, as *Neophron percnopterus*. Yet, though never consorting with its own species, it has no repugnance to the neighbourhood of others; and as on the Atlas, so in Palestine, its breeding-places are generally in the same cliffs with the colonies of Griffons. It may occasionally be seen in all parts of Palestine. I first noticed it on the top of Gerizim, sailing up the valley of Shechem. During the month of January we occasionally descried it overhead at the edge of the deep gorges which open on to the Dead Sea; in February it passed over the desert plains of Beersheba; and in March we had the pleasure of starting a

noble Gypaete from its feast, only a few yards from us, on the vast open plain which extends from the forests of Gilead to the Hauran. We only ascertained three breeding-places, in none of which were we successful in obtaining its eggs—the first in the ravine of the Jabbok under Mount Gilead, and the others in the Wady Hamam, or Pigeon ravine, and the Wady Leimun, both opening on the plain of Gennesaret. In both of these latter localities were colonies of hundreds of Griffons. Dr. Jerdon states that in India it lays its eggs in April and May; but we found it in the Atlas sitting in February, and in Palestine it had hatched its young in March. Those birds which we had an opportunity of examining more closely had the ochreous colour on the lower parts developed with remarkable intensity. I do not know a greater treat for the ornithologist than to watch a pair of Lämmergeyers, in the Wady Hamam in the early morning, commencing their matutinal exercise by sailing close to the ground down the ravine, beneath cliffs 2000 feet high, and then gently steering by their tails, without any apparent motion of the outspread wings, one after the other across the mouth of the gorge, and reconnoitering leisurely as they retraced their flight on the opposite side at a little higher elevation. Soon they would beat down the other side, and after working carefully the whole face of the cliffs, would gradually rise above the valley in circling flights till they were lost to our eyes in the aërial distance above."

The Bearded Vulture of North-eastern Africa is a distinct species, *G. meridionalis*, Bon. (*G. nudipes*, Br.), easily distinguishable by having the lower part of the tarsus bare; and the only part of Africa where the present species is with certainty known to occur is the Atlas range. Mr. Osbert Salvin has published some excellent notes regarding its occurrence in that part of Africa, as follows:—"The first opportunity I had of observing this finest of birds was in the neighbourhood of Souk Harras in the first week in April. In a ramble in search of a spot for our encampment, we discovered an eyry in one of the stupendous cliffs that characterize that district. It was quite inaccessible; and we had to bear our disappointment, as well as a good wetting, and return to the hotel (if the house where we put up may be designated by such a title) after an almost fruitless day. We were not then aware that the eggs of this species had long been hatched. On encamping at Djebel Dekma on the 4th of April, more frequent opportunities were afforded us of becoming acquainted with this bird. This mass of precipitous rocks is one of the most interesting and curious in the country. The strata form an angle of about 20° with the vertical, and, dipping towards the north, present a comparatively flat face, with bushes and shrubs growing out of the interstices. The southern cliff is more broken, and the strata much more horizontal. Towards the east the two parallel precipices are terminated by another broken precipice, which cuts the first two at right angles. In the centre of this group, and at its highest point, the whole mass is parted, leaving a rugged gorge running north and south, having towering rocks on each side. The formation seemed to be almost entirely composed of nummulite. In this range a pair of Lämmergeyer had their eyry in the western side of the gorge, just above a cave that pierces the strata. To this nest one of our Arab servants, Mohamed, climbed and brought down a half-fledged young one, which, after living some few days, came to an untimely end.

"The range at Khifan M'sakta, our next camp, stretches south-west and north-east, and, though hardly on so grand a scale as Djebel Dekma, is somewhat similar in its peculiar isolation, the same feature of vertical strata presenting itself. A pair of Lämmergeyer also occupied these

rocks, their nest being in a hole on the north-west side. At Kef Laks, in the precipices called by the Arabs 'Gala el Hamara,' was another eyry. None of the stories of the Lämmergeyer defending its young against one so hardy as to assail its nest were ever realized during our stay in their localities; and though their eyries were repeatedly scaled and their young taken, the old birds not only never offered an attack, but in all cases either kept at a respectful distance, or never showed themselves at all. Immature birds of this species seldom occur in the breeding-haunts of the old ones; I only saw one during my whole stay. This remark probably applies to all the birds of prey; and its truth is especially illustrated in the case of the Egyptian Vulture (*Neophron percnopterus*), immature birds of which I hardly ever saw. It would appear that this bird, like the *Gyps fulvus*, seldom, if ever, lays more than one egg; no instance of more than one young ever occurred in the nests visited. The food of the Lämmergeyer consists principally of the Land-Tortoises (*Testudo mauritanica*), which abound throughout the country. These it carries to some height in the air, and lets fall on a stone to break the shell. It is an early breeder. The eggs must be laid in January, or at the beginning of February at the latest, as in the early part of April the young, in every case that came under our observation, had been hatched at least a month. I cannot concur in the supposition, suggested by the reviewer of Mr. Bree's 'Birds of Europe,' in the last number of 'The Ibis,' 'that the rich tawny hue of the under surface in some individuals of the Lämmergeyer is probably owing to a stain, the effect of bathing in muddy water, or of rolling in the sand with wet plumage.' That such a cause should produce such an effect is not very obvious; and even if it were so, one can hardly, by such an hypothesis, account for the colours being distributed *only* on the under surface and lighter portions of the plumage; one would expect that the rolling process would extend some of its influence to the darker portions also. All the mature birds I saw wore a deep shade of this rich colouring."

To the eastward the Bearded Vulture is found through Cashmere and the Himalayas to China. Mr. W. T. Blanford, who has just returned from Persia, informs us that he "met with it in Sikkim only amongst the higher mountains; in Persia it is generally distributed throughout all the hilly parts of the country, but was not observed below about 4000 feet above the sea-level." It was met with in Siberia by the Russian travellers. Middendorff did not succeed in obtaining a specimen of this Vulture, but states that the Tungusians speak of a large raptor as nesting east of the Päsino Lakes, which, from their description, he considers to be *G. barbatus*. Middendorff also speaks of the Gypaete found in the Altai Mountains as identical in colour, plumage, and size with *Gyp. barbatus* from the Alps, but as having the tarsus feathered to the root of the toes. Those from the Caucasus are less feathered on the tarsus than the bird from the Altai, but more than the Alpine bird.

Radde states that the Bearded Vulture is becoming fast extinct. In the mountain country visited by him it is only found on Russian territory in the Central Oká. In Dauria and Mandshuria, though it is known by name to the hunters, it is extinct. It is still found in Kentei, and in the portion of the Red Mountains bordering the right shore of the Kyrkun, called Zongolok. In 1830 it was observed in Dauria, in the Adontscholon Mountains, where Pallas also observed it in 1772. As the Argali sheep have gradually receded in a south-easterly direction, so has *G. barbatus* also disappeared from these parts of the country. Old hunters

living there say that the numerous researches formerly made in the Adontscholon Mountains after topazes and beryl have caused these shy birds to desert their breeding-places. Its range in India is given by Dr. Jerdon as "the Himalayas, from Nepâl to Cashmere, and also on the Salt and Suliman ranges of the Punjab. We did not observe it at Darjeeling; but it extends from the skirt of the hills to the snowy range, and is not uncommon at Simla, Mussooree, and other stations in the north-west Himalayas, and most numerous where there are convalescent depôts of European troops stationed, being attracted by the greater abundance of offal and refuse in such places, which certainly form the chief part of the food of this Vulture. At Landour it is very common, and quite fearless of man, often passing overhead within a few yards or alighting on the ground not far from a road. Both in general structure and habits I consider *Gypaetos* most nearly allied to *Neophron*; and Mr. Hume, who agrees with me in this, tells me that he has known it (like the *Neophron*) to feed on human ordure. In the interior of the hills it is said at times to carry off Pheasants, Chukor Partridges, and occasionally young lambs; and Mr. Brooks mentions that a rabbit-yard at Almora was visited by one of these birds, and rabbit after rabbit carried off. I much doubt the stories related of its pushing large animals over cliffs. I found it in considerable numbers frequenting the cliffs on the south face of the Salt range of hills in the Punjab, not far from Jhelum."

Major Irby, in his notes on the birds of Oudh and Kumaon, writes that it is "common in Kumaon, especially near Almorah and Nynee Tal, where it appears to feed almost exclusively on carrion. All Europeans, not ornithologists, call it the 'Golden Eagle,' probably on account of the reddish tinge on the breast, which is very apparent when the bird is on the wing." Mr. Swinhoe writes that he saw a specimen in the Catholic Museum at Pekin, which was procured by Père Armand David in the mountains west of that city.

The Bearded Vulture is very solitary in its habits, inhabiting the higher ranges of the lofty mountain-ranges. It has been looked on as a bold rapacious robber, and has been accused of attacking chamois, goats, and even men; but many of these accounts are greatly exaggerated. It partakes far more of the Vulture in its habits than of the Eagle, feeds on carrion and such refuse as it can pick up, sometimes doubtless attacking weakly lambs, or catching mountain-hares. There are, however, authentic records of its having attacked children, when impelled by hunger. We translate the following anecdote from Naumann's 'Naturgeschichte der Vögel Deutschlands,' which he states is well authenticated:—"Anna Zurbuchen, of Habchern, in Bern Oberland, born in 1760, was taken out by her parents, when she was nearly three years old, when they went to collect herbs. She fell asleep, and the father put his straw hat over her face and went to his work. Shortly after when he returned with a bundle of hay the child was gone; and the parents and peasants sought her in vain. During this time Heinrich Michel, of Unterseen, was going on a wild path to Wäppesbach, and suddenly heard a child cry; he ran towards the sound, and a Bearded Vulture rose, scared by him, from a mound and soared away over the precipice. On the extreme edge of the latter, below which a stream roared, and over whose edge any movement would have precipitated it, Michel found the child, which was uninjured, except on the left arm and hand, where the bird had probably clutched it; its shoes, stockings, and cap were gone. This occurred on the 12th of July, 1763. The place where

the child was found was about 1400 paces distant from the barn where it had been left asleep. The child was afterwards called *Lämmergeier-Anni*, and married Peter Frutiger, a tailor in Gewaldswyl, where she was still living in 1814."

Mr. W. H. Hudlestone, writing on the habits of this bird in Greece, says that "it is not a demonstrative bird, like the Griffon, who may be seen sailing about at a great height in the air, sometimes alone, but more often in troops of from half a dozen to fifty, revolving in endless circles round each other, that no corner may remain unseen. The Lämmergeyer, on the contrary, may be observed floating slowly at a uniform level, close to the cliffs of some deep ravine, where his shadow is perhaps projected on the wall-like rocks. If the ravine has salient and reentering angles, he does not cut across from point to point, but preserves the same distance from the cliff; and when he disappears at any lateral fissure, you feel sure of the very spot where he will emerge on turning the corner of the precipice. Marrow-bones are the dainties he loves the best; and when the other Vultures have picked the flesh off any animal, he comes in at the end of the feast and swallows the bones, or breaks them and swallows the pieces, if he cannot get the marrow out otherwise. The bones he cracks by taking them to a great height, and letting them fall upon a stone. This is probably the bird that dropped a Tortoise on the bald head of poor old Æschylus. Not, however, that he restricts himself, or the huge black infant that he and his mate are bringing up in one of the many holes with which the limestone precipice abounds, to marrow, Turtle, bones, and similar delicacies: neither Lamb, Hare, nor Kid come amiss to him, though, his power of claw and beak being feeble for so large a bird, he cannot tear his meat like other Vultures and Eagles. To make amends for this, his powers of deglutition are enormous. The Greeks believe he will swallow and digest any thing; but the stories I have heard on this point are too marvellous to be mentioned in 'The Ibis.' One man averred that an old axe-head had been found in this bird. If so, the meeting of the marrow-bones and cleaver must have been affecting in the extreme. The character of the Greeks for mendacity is well-known; any naturalist travelling in this country will find their information as unreliable as their assistance is unwilling. I once saw a mature bird of this species which had evidently swallowed a bone, or something uncommonly indigestible, close to the *abattoir* at Athens. He was in a very uncomfortable attitude, and appeared to be leaning on his long tail for support. After riding round in continually decreasing circles till within ten yards, I dropped off horse-back and made a rush at him, but he just managed to escape, and then rising slowly till about the height of the Acropolis, made off towards the Gorge of Phyle, where there is an eyry. The Lämmergeyer has an extremely ugly countenance; this becomes perfectly diabolical when he is irritated and shows the bright red round his eyes. Altogether, what with his black beard, rufous breast, and long dark tail, he is an awful-looking beast, and has the reputation of committing divers evil deeds,—such, for instance, as pushing Lambs and Kids, and even men, off the rocks, when they are in ticklish situations. Nevertheless he is a somewhat cowardly bird, has a feeble querulous cry, and will submit to insults from a Falcon not a fourth its size or weight.

"The only inhabited nest of this species we discovered was situated in the face of the upper tier of precipices which form the reentering angle of the Great Klissoura, looking due north, and facing the northern arm of that extraordinary fissure, of which I ought to attempt a short

description, as, besides the Lämmergeyer's nest, it contains by far the largest colony of *Vultur fulvus* in these regions."

In Europe the Bearded Vulture is an early breeder, and its eggs are usually deposited in the month of February. It lays usually two eggs, depositing them in a large bulky nest built of sticks, and lined with wool or some other soft material. The nest is built in the high mountains, generally in some almost inaccessible position, especially if the bird has been molested; but it evinces a great dislike to forsake any favourite locality. Mr. Hume gives the account of the taking of an eyry in the Himalayas by Captain Cock, which we copy as follows:—"On the 4th of December, 1868, I found the nest of *Gypaetos barbatus*, in a hollow on the face of a steep precipice, situated in a range of hills some six miles off the Grand Trunk Road, two marches from Rawulpindee on the Peshawur side. I was out after nests, with but little hope of finding any at that time of the year, when the Shikaree I had with me told me that some years before, when out with some sportsmen after Ounal, they had frightened a large bird off its nest; and he volunteered to show me where it was. We accordingly went to a steep gorge in the hill, very narrow, but with a tremendous precipice on each side. From the top, where I was standing, to the opposite side might have been some 90 yards across, and the precipice was some 180 feet in depth. About halfway down, in what seemed a sheer wall of rock, was a hollow some 6 feet in height and 5 feet in depth and breadth. In this was placed the Lämmergeyer's nest.

"The old bird was on her nest, and I looked at her for some time with the glass; she took alarm at once, and advancing to the edge of her nest stood up and looked at me with her neck stretched out and head turned sideways, bringing one eye to bear on me. She was a most noble-looking bird, her large yellow eye setting off her appearance. Flinging some stones down into the gorge to frighten her, she soon glided off her nest, and I could see two eggs. I now sat down to reconnoitre and plan some way of getting her eggs. By means of a shelf of rock I could crawl to within 15 feet of her nest; but there it ended. I had three long ropes with me, but they would only just reach down to the nest from the top; one of my fellows, a young light lad of fifteen, offered to go over the precipice with the rope round him. We made the rope fast to a tree above, and the boy's brother, a sturdy Pathan, payed out the rope, and the young fellow went over most gallantly. Both Lämmergeyers now came flying round, but did not evince any great courage; for after I had hurled some bits of rock at them, the male went off altogether, and the female only hovered about at some distance.

"The young Pathan now got into the nest and walked about in it. It was a large structure of sticks, and completely filled up the hollow or cave in which it was placed. It was lined with locks of the hair of hill-goats, on which the eggs were placed; there was also one piece of cloth in the nest, some blue cotton stuff, by which I was reminded of this bird's relationship to *Neophron*. The eggs were set, I should think, from fifteen to eighteen days."

In Dresser's collection are eggs from the Pyrenees, which are rather short and stout in shape, and measure $3\frac{5}{40}$ by $2\frac{15}{40}$ inches; in colour they are dull yellowish orange, inclining in parts to rusty yellow. Our friend Dr. E. Rey writes to us as follows:—"Some twelve to fifteen eggs of this species have passed through my hands. At present I possess only two eggs from the Pyrenees: one measures 78·5 by 61·0 millimetres, the other 79·0 by 60·0 millimetres. This latter egg is peculiarly marked: from its smaller end to where it expands into greatest breadth

is quite white; from there a zone of cloudy rust-red encircles it, which, gradually deepening in intensity, becomes a dark rust-red patch over the larger end of the egg, showing here and there a few white lines and scratches, evidently caused by friction with the materials of the nest." Three eggs collected in Greece by Dr. Krüper measure 90 by 70, 85·5 by 69, and 84·5 by 66 millimetres respectively."

The adult and immature birds figured and described are in Dresser's collection, the young in Mr. Saunders's collection, and the nestling in Mr. A. Basil Brooke's collection; full particulars of locality and date are given above.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Sierra de Huetor, Granada, 1870. *b*, ♀ *juv.* Granada, March 1870 (*H. Saunders*).

E Mus. A. B. Brooke.

a, pullus. Sardinia, April 18th (*A. B. B.*).

E Mus. Howard Saunders.

a, pullus. Gaitanes, Spain, May 4th. *b*, ♀ *ad.* Sierra de Cogollos, Spain, May 1872. *c*, ♀. Sierra Nevada, June 1871.

E Mus. Lord Walden.

a, ♂. Simla (*Beavan*). *b*. Himalayas.

Family FALCONIDÆ.

Genus CIRCUS.

Accipiter apud Brisson, Orn. i. p. 345 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 126 (1766).
Aquila apud Schrank, Fauna Boica, i. p. 108 (1798).
Circus, Lacépède, Mém. de l'Inst. iii. p. 506 (1800).
Pygargus apud Koch, Baier. Zool. i. p. 127 (1816).
Buteo apud Fleming, Brit. Anim. p. 55 (1828).
Strigiceps apud Bonaparte, Sagg. Distr. Met. An. Vertebr. p. 37 (1831).
Glaucopterix apud Kaup, Classif. d. Säugeth. u. Vög. p. 113 (1844).
Pterocircus apud Koch, Archiv f. Naturg. xvi. p. 32 (1850).

The Harriers, of which fifteen species are known, inhabit the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, being, however, absent from the Malay archipelago, excepting Celebes. Of these fifteen species four inhabit the Western Palæarctic Region, their range being given in the following articles. By many authorities the Harriers have been looked on as forming a sort of link between the diurnal and nocturnal Raptores; and they certainly exhibit no slight affinity to the Owls in the ruff, the large aperture of the ear, and in the soft texture of their plumage; but later research has shown that they are better placed after the Vulturidæ, which family separates them from the Strigidæ and Bubonidæ. The Harriers affect open country, and several of the species exhibit a partiality for wet swampy localities. They fly tolerably swiftly, often near the ground, which they quarter carefully by flying in circles in search of food. They feed on small mammals, birds (more especially young ones), reptiles, insects, fishes, and birds' eggs, and are very destructive in places where aquatic birds breed numerously. They place their nests on the ground, and deposit bluish white, broadly elliptical eggs, which, however, in exceptional cases are marked with a few deep-rufous spots.

Circus cyaneus, the type of the genus, has the beak small, decurved from the base, the cutting-edge of the upper mandible slightly festooned; nostrils oval, partly concealed by stiff hairs, cere large; lower part of the head surrounded by a ruff of small close feathers; wings long, the first quill about equal to the seventh, the fourth longest, the first four quills notched on the inner web; tail long, nearly even; legs long and slender, tarsus smooth, feathered on the uppermost part; toes short, the centre one longest, the lateral ones nearly equal, claws slender, curved, very acute



Hanhart imp.

MARSH HARRIER.
1 YOUNG MALE
2 ADULT FEMALE.



J.Wolf del. J.Smit lith.

Hanhart imp.

MARSH HARRIER.
CIRCUS ÆRUGINOSUS

CIRCUS ÆRUGINOSUS.

(MARSH-HARRIER.)

Accipiter circus palustris, Briss. Orn. i. p. 401 (1760).
Accipiter circus rufus, Briss. tom. cit. p. 404 (1760).
Falco æruginosus, Linn. Syst. Nat. i. p. 130 (1766).
La Harpaye, Buff. Hist. Nat. Ois. i. p. 217 (1770).
Le Busard, Buff. tom. cit. p. 218, pl. x. (1770).
Falco rufus, Gmel. Syst. Nat. i. p. 266 (1788).
Falco arundinaceus, Bechst. Orn. Taschenb. p. 25 (1802).
Circus æruginosus (L.), Savigny, Syst. Ois. de l'Egypte, p. 30 (1810).
Circus rufus (Gm.), Savigny, op. cit. p. 31 (1810).
Accipiter circus, Pall. Zoogr. Rosso-As. i. p. 362 (1811).
Acciper (sic) *æruginosus* (L.), Koch, Baier. Zool. i. p. 119 (1816).
Buteo æruginosus (L.), Flem. Brit. Anim. p. 55 (1828).
Pygargus, Kaup (*Falco rufus*, Gm.), Natürl. Syst. p. 73 (1829).
Circus arundinaceus (Bechst.), C. L. Brehm, Vög. Deutschl. p. 91 (1831).
Circus variegatus, Sykes, Proc. Zool. Soc. 1832, p. 81.
Circus aquaticus, C. L. Brehm, Isis, 1832, p. 838.
Circus sykesii, Less. Compl. Buff. vii. p. 161 (1836).
Buteo rufus (Gm.), Couch, Corn. Faun. p. 11 (1838).
Circus æruginosus, var. *a*, *byzantinus*, Bp. Cat. Parzud. p. 2 (1856).
Circus umbrinus, Heugl. Syst. Uebers. Vög. N.O.-Afr. p. 12 (1856).
Circus heuglinii, Pr. Würtemb. Icon. t. 31, fide Von Heugl. Orn. N.O.-Afr. i. p. 104 (1869).
Circus palustris, Brehm, fide Von Heugl. ut suprà.

Marsh-Harrier, *Moor-Buzzard*, English; *Busard des marais*, French; *Aguilucho*, *Rapiña*, Spanish; *Falco cappucino*, *Falco di paduli*, Italian; *Bu-ghadam*, Maltese; *Hedia*, Moorish; *Rohrweihe*, *Rostweihe*, *Sumpf-Bussard*, German; *Bruine Kuikendief*, *Rietwouw*, Dutch; *Rödbrun-Kjærhög*, Danish; *Rostbrun Kärrhök*, Swedish; *Kameshnik*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 423, 424, 460; Werner, Atlas, *Rapaces*, pl. 31; Kjærb. Orn. Dan. taf. 5, Suppl. taf. 3; Frisch, Vög. Deutschl. taf. 77; Fritsch, Vög. Eur. taf. 9. fig. 5, taf. 10. figs. 5, 6, 7; Naumann, Vög. Deutschl. taf. 37, 38. fig. 1; Gould, B. of Eur. pl. 32; id. B. of G. Brit. i. pls. 24, 25; Schlegel, Vog. Nederl. pls. 20, 21, 22; Bettoni, Ucc. Lomb. pls. 31, 32; Susemihl, Vög. Eur. taf. 36; Rowley, Orn. Misc. ii. pl. to p. 65.

♂ *ad.* pileo, nuchâ et capitis lateribus ochraceo-albidis, ferrugineo et fusco striatis: dorso et scapularibus nigricanti-chocolatinis, vix fulvido notatis: caudâ cinereâ cervino apicatâ: remigibus primariis nigro-

fuscis, intimis cinereo notatis, secundariis et tectricibus alarum majoribus sordidè cæruleo-cinereis: tectricibus alarum minoribus fuscis, ochraceo-albido notatis: gulâ albidâ: pectore ochraceo-albido, ferrugineo et fulvo-fusco notato: corpore reliquo subtùs ferrugineo-fusco, saturatè fusco notato: subalaribus ochraceo-isabellinis: rostro corneo, cerâ et pedibus flavis: iride pallidè flavâ.

♀ *ad.* pileo et nuchâ isabellinis vix fusco-striatis: dorso albo, umbrino notato, uropygio ochraceo lavato: remigibus nigro-fuscis, pallidiore apicatis: tectricibus alarum umbrinis, versus apicem pallidiore tinctis: alarum marginibus et tectricibus minoribus isabellino-albidis fusco notatis: caudâ fuscâ pallidiore tinctâ: mento ochraceo-isabellino, gulâ et gutture fuscis, pectore ochraceo-albido vix fusco tincto, corpore reliquo subtùs chocolatino-fusco.

Juv. saturatè chocolatino-fuscus: pileo et nuchâ aurantiaco-isabellinis, pileo maculâ centrali fuscâ notato: gulâ aurantiaco-isabellinâ immaculatâ: remigibus et caudâ nigro-fuscis, secundariis et tectricibus alarum ferrugineo-ochraceo apicatis.

Adult Male (Casa Vieja, 26th February). Crown and nape warm ochreous white, closely striped with chocolate and blackish brown; back and scapulars blackish chocolate, very slightly marked with dark fulvous; tail dull ashy grey with light yellowish buff; primaries blackish brown, the inner ones marked with ashy grey; secondaries and larger wing-coverts ashy blue-grey; lesser coverts like the back, but marked along the shoulder with ochreous white; sides of the head marked like the crown; chin dirty white; breast yellowish white, marked with rusty red and dark reddish brown; rest of the underparts warm rusty red marked with chocolate-brown; under wing-coverts tawny ochreous isabelline; bill horn; cere and legs yellow; iris lemon-yellow. Total length about 19 inches, culmen 1·32, wing 14·8, tail 8·9, tarsus 3·3.

A still older male, which I have figured, has the head and neck blackish brown, but little marked with warm buff, the upper parts more of a blackish brown colour, and the breast and underparts white, only slightly tinged with warm isabelline, and sparingly striped with blackish brown.

Adult Female (Corsica, 15th April). Crown and nape white, slightly tinged with warm isabelline, and sparingly striated with blackish; back white, marked with umber-brown, on the rump washed with warm ochreous; quills blackish brown, with lighter tips; wing-coverts dark umber-brown, broadly tipped with earth brown; a broad margin along the edges of the wing warm creamy white, sparingly marked with dark brown; tail dark brown, with lighter tip; chin warm creamy buff; throat warm ash-brown; a broad ochreous white band across the breast, slightly marked with brown; rest of the underparts dark chocolate-brown. In size rather larger than the male, measuring—wing 16·0 inches, tail 10·5, tarsus 3·45.

Young Male (Dobrudscha, 4th July). Crown, nape, chin, and upper throat warm orange-buff; crown with a dark brown mark in the centre; rest of the plumage almost uniform dark chocolate-brown, the quills and tail darker, the secondaries and larger wing-coverts with rusty ochreous tips, and the rest of the wing-coverts with lighter edges.

In Europe this Harrier does not range far north; but it is found throughout the central and southern countries down into Africa, where it has occurred as far south as the Transvaal. In Asia it is common as far east as India, but beyond that it is rare, though it has been met with as far east as Japan.

In Great Britain it used formerly to breed regularly, and was extremely numerous in the

fen districts, but since these fens were drained it now breeds but very rarely with us. According to Mr. A. G. More and Professor Newton Devonshire and the eastern portion of Norfolk are now its only regular breeding-places in England, though its nest may occasionally be found in Cornwall, Somerset, Dorset, Hampshire, and Shropshire. In Wales, Suffolk, Cambridgeshire, Huntingdonshire, Lincolnshire, and the counties from Yorkshire northward it has become historical. Lord Lilford informs me that he only once met with it in Northamptonshire; but he adds that he has frequently seen it in Cambridgeshire and Norfolk, as also in various parts of Wales, where it used to breed in the marshes near Powyn, in Merionethshire. Mr. Cordeaux writes (B. of Humb. Distr. p. 10), the Marsh-Harrier "is now probably extinct in North Lincolnshire. I have met with no specimen, dead or alive, during the last ten years. Mr. Boyes mentions a young male Marsh-Harrier shot near Beverley on the 13th of October 1871, and remarks that it was quite a rare and accidental occurrence." Mr. Hancock says (B. of North. & Durh. p. 17), Though this Harrier was "a few years ago common on swampy moorlands, where it bred, it has now almost disappeared under the policy of the game-preserver, and has fallen, or is fast falling, from the rank of a resident to that of a mere casual visitant. In 1823 I took a nest of it, with four eggs, on the moors at Wemmergill, near Middleton-in-Teesdale, the shooting-box of the late Lord Strathmore. Both parent birds had been shot or trapped by the gamekeeper, and formed part of his museum, nailed against the stable-walls. This collection was made up of Hawks, Owls, Daws, Buzzards, and such like 'vermin,' both biped and quadruped, being altogether one of the largest and most disgusting I have ever seen. It is now quite impossible in the north of England for any gamekeeper to form such another museum to bear testimony to his zeal and ignorance, as the so-called vermin no longer exist.

"A few years ago my friend Mr. Thomas Thompson, of Winlaton, obtained a nest with four eggs of the Marsh-Harrier near Haydon Bridge; and a female was shot at Hartington, near Durham, August 1840."

Mr. Robert Gray writes respecting the occurrence of this species in Scotland (B. of W. of Scotl. p. 51) as follows:—"Nearly all the Scottish specimens of the Marsh-Harrier which I have had the opportunity of examining have been birds of the first and second year's plumage. It appears to be of much rarer occurrence in most districts than the Hen-Harrier; and in the Long Island, especially where the nature of the ground is so attractive to a bird of its habits, it is but very seldom seen, while its congener, the Ring-tail, may be called abundant. I have seen it on wing sufficiently close to be recognized on the island of Benbecula; and Macgillivray mentions having met with it on Harris. It is possible, however, that it may be more common on North and South Uist than my limited observations, especially on the last-named island, have led me to believe. The Rev. Alexander Stewart, of Ballachulish, author of a series of excellent papers on the Natural History of Nether Lochaber, published during the last few years in the 'Inverness Courier,' has kindly informed me that the Marsh-Harrier is comparatively common in that district, and also in the district of Appin, in Argyleshire. He has frequently seen it on the wing, and handled at least a dozen specimens shot in his neighbourhood during the last seven or eight years.

"On the east coast of Scotland I am most familiar with this bird as an East-Lothian species, having examined a number of specimens that were shot in that county. I noticed many years

ago its partiality for Ducks and Pigeons at the Tyne estuary, where a fine specimen formed a marked object for some months before being taken. As the birds on which it was occasionally seen feeding were full-grown, they may have been wounded, and thus have fallen an easy prey. I can hardly think any Buzzard strong enough to pursue and kill a Wild Duck of any species. Messrs. Baikie and Heddle state that this bird is an occasional visitant in Orkney; and it is likewise known to be a straggler in some parts of Shetland."

In Ireland, according to Thompson, it is resident in suitable localities; and Professor Newton states, on the authority of Mr. Watters, that it was the most abundant of the larger birds of prey there.

It has not been recorded from Greenland or Iceland; but Mr. H. C. Müller obtained a specimen in the Færoes, which he says was shot on the Kollefiord in September 1869. It is found in Scandinavia, but is of very rare occurrence. Mr. Collett records only two instances of its occurrence in Norway—one in Christiania in 1825, and another at Frederiksstad in 1839.

In Sweden it is commoner than in Norway. Nilsson says that it breeds annually on the larger lakes in Southern Skåne, as, for instance, at Näsbyholm &c. According to Wallengren it nests also in the districts of Nosaby and Opmanna; and Malmlén speaks of it as being common at Gothenburg. It does not appear to have occurred in Finland; but it is not uncommon in Russia. Mr. Sabanäeff says that it breeds in the Jaroslaf Government, and more frequently in the Moscow, Tula, and Tamboff Governments, but does not occur in Vologda; it is tolerably common on the Volga and Kama rivers; and he found it numerous on the eastern slopes of the Ural; but it must be rare, he adds, north of Ekaterinburg. Teplouhoff, however, met with it on the Obva in $57\frac{1}{2}^{\circ}$ N. lat. Mr. Taczanowski writes that it is common in Poland in summer, arriving early in March and leaving late in September. According to Borggreve it is found in all marshy districts in North Germany during the summer, but avoids the mountains. He found it common in the eastern districts; and it is said to be numerous in Mecklenburg, East Friesland, and Oldenburg, but is not known to breed in Münsterland. Mr. J. Collin says that it is found here and there in Denmark from March to October, but retires to warmer localities for the winter. It breeds in many parts of Holland and Belgium, especially in the large marshes of the Campine and Flanders, and is found throughout France in marshy localities, and breeds in the Camargue, at the mouth of the Rhone. Professor Barboza du Bocage records it as being common in Portugal in suitable localities; and it is abundant throughout Spain, positively swarming in the marshes of the Guadalquivir. Mr. A. von Homeyer also says that it breeds numerously in the Balearic Islands.

In Savoy it occurs only on passage, and does not remain to breed there; and in Italy it is numerous not only in the marshes but in the Campagna, and is also common in Sicily and Sardinia. In the latter island, Mr. A. B. Brooke writes (Ibis, 1873, p. 154), the Marsh-Harrier is "very common about the plains; and round in the neigbourhood of Oristano they swarm. A nest I found in the end of April was built in the middle of a reedy marshy lake, placed halfway up the stems of the reeds, just clear of the water; the bottom was formed of rough coarse sticks, and the interior of dried matted rushes, in some cases with the roots attached, the egg lying carelessly in the middle. Out of all the numbers that passed under my notice, I never observed any, excepting in the dark brown plumage with the yellow head, a few showing buff markings,

more or less, on the scapulars &c." Lord Lilford informs me that he found it numerous in Sicily and Corsica; and, according to Mr. C. Bygrave Wharton, it is common in the plains and swamps on both sides of the latter island. In Malta, Mr. C. A. Wright states (Ibis, 1864, p. 46), it is "tolerably common in the spring and autumn, commencing to appear, in the former season, in March, and in the latter in September. It may then be seen, with the other Harriers, hunting the rocks and fields for quails, lizards, insects, and small birds. Harriers will turn at the sound of a quail-call; and the Maltese sportsmen often use it to draw them within shot."

In Bohemia, Dr. Anton Fritsch writes (J. f. O. 1871, p. 181), "this Harrier is very abundant in the well-watered districts of Bohemia, and is breeding especially in the vicinity of Frauenberg, near Pardubic, and on the edges of the pond Krešic, near Kopidlno. In other parts of Bohemia it is not often met with. Mr. Lokaj received one specimen from the Sarka valley."

It is common in Austria and Styria, and also, according to Messrs. Danford and Harvie-Brown (Ibis, 1875, p. 296), in Transylvania: they say, it was "rather common in the autumn at Hátzeg, Klausenburg. The only specimen we can be sure of was obtained by us on one of the little marshes near the latter place; but we may have seen others in the Mezöség. This species was unusually abundant in the winter of 1868–69, probably in consequence of there being a good supply of field-mice." Mr. Farman found it common in the marshes round the lakes of Drona, in Bulgaria; and in Turkey, Messrs. Elwes and Buckley write (Ibis, 1870, p. 76), it is "extremely numerous in every part of the country where marshy ground is to be found, more so than any other bird of prey. The great variety of plumage in this species is at first very puzzling, some of the very old males having the wings and tail of a bluish cream-colour, and in some cases nearly white; Mr. Robson has a specimen whose entire plumage is of a deep brown, nearly black." Dr. Krüper states that it is resident in Greece, as large numbers winter and some remain to breed, nesting late in April or in May. It is, he adds, common in Crete late in April and early in May, and is one of the commonest of the birds of prey in Corfu, Epirus, Acarnania, and Albania. Lord Lilford informs me that he found it literally swarming in parts of Epirus, and he also met with it in Crete and Cyprus.

In the south of Russia it is said to be found in almost all marshy localities, being, according to Eversmann, especially numerous in the southern portions of the Ural, though less so on the Lower Volga, whereas in the Caucasus it is extremely rare; Mr. Goebel states that in the Uman district at least one pair is to be found in every large reedy pond. I find but little information on record respecting its occurrence in Asia Minor, where it is certainly found in suitable localities; and Canon Tristram says that it is common in Palestine at all seasons of the year on all open ground, and is far more numerous than any of the other Harriers.

In North-east Africa it is common in winter, being, according to Captain Shelley, by far most abundant in the Delta and the Fayoom. Mr. Blanford met with it in the highlands of Abyssinia; and Von Heuglin says that it is found along the Nile to the equator. He did not meet with it in the summer; but Brehm states that it breeds in the delta of the Nile. Von Heuglin at first was inclined to describe a new species of Harrier under the name of *Circus umbrinus*; but he subsequently withdrew this name, and says that his *Circus umbrinus* is merely the young male of the Marsh-Harrier.

According to Loche this Harrier is common in marshy localities in Algeria. Mr. Salvin

only met with it once at Aïn Djendeli; but Mr. Tyrwhitt-Drake found it abundant in Morocco, where, M. Favier writes, "it is the commonest of the Harriers, and is both resident and migratory in the vicinity of Tangier. Those which migrate pass to Europe in February and March, returning in September and October. They commence to breed late in March." Ledru says that it occurs in the Canaries; but subsequent investigation does not confirm this statement. It certainly is seen, though very rarely, as far south on the continent of Africa as the Transvaal; for Mr. Ayres (Ibis, 1871, p. 147) shot a young male in the vicinity of Potchefstroom in December 1869, and sent it to Mr. Gurney, who confirmed his identification of it.

In Asia it is found as far east as Japan. Major St. John states that it is common in marshy places in Persia; and I have seen examples from Erzeroom. According to Dr. Jerdon (B. of India, i. p. 100) it is "generally spread throughout India, frequenting banks of rivers, lakes, marshes, and inundated fields or wet meadow-land, occasionally hunting over grass or dry grain-fields. It feeds chiefly on frogs, fish, water-insects; also on rats, shrews, and various young or weakly birds. It not unfrequently carries off wounded Snipe and even Teal, and often follows the sportsman." Mr. A. O. Hume writes (Stray Feathers, i. p. 160), it is "very common both along the great rivers of the Punjab and Sindh, and about all the inland waters of the latter province. In Southern Sindh, and generally in the arid tracts that compose so large a portion of the area of the province, we never saw it;" and in his article on the Ornithology of the Islands of the Bay of Bengal, he adds as follows:—"Davison saw a pair of young birds of this species hawking over the paddy flats at Aberdeen during the first week in May, but failed to get a shot. It is apparently rare even in the neighbourhood of Port Blair; and we none of us ever saw it elsewhere during our peregrinations." Mr. Holdsworth says that it is only an occasional visitant to Ceylon. He observed a pair near Aripo in January 1870, and shot the female. Mr. Vincent Legge also writes (Ibis, 1874, p. 10) that it "arrives in the south of Ceylon in the middle of October, and is very numerous close to the town of Galle. During the north-east monsoon-rains in December these birds feed much on fish in the flooded flat lands of the south."

Neither Von Middendorff nor Von Schrenck record it from Siberia, though Pallas says that it is common; but Dr. Radde says this statement can only refer to Western Siberia, as he merely saw it occasionally on passage in the autumn at Tarei-nor, and adds that it is very rare. He saw it at Kulussutajeffsk on the 28th August, O.S., and picked up a young male dead on the 5th (17th) September. It is very possible that Dr. Radde may have been in error as regards his specimens being our Marsh-Harrier; for Mr. Taczanowski states (J. f. O. 1874, p. 316) that it does not occur in Eastern Siberia, and that the two young birds sent from Darasun belong doubtless to *Circus spilonotus*. It certainly occurs in China; for Mr. Swinhoe obtained it at Swatow, Amoy, S.W. Formosa, and Hainan; and Père David says that it is found in but small numbers in China, and is rarer in the south than in the northern portion of the empire. He only once met with it in Mongolia. There is, according to Professor Schlegel, an adult female in the Leyden Museum obtained by Siebold in Japan; and Captain Blakiston says (Ibis, 1863, p. 98) that a specimen he obtained in that country was determined by Mr. Gurney as an adult female; but Messrs. Blakiston and Pryer, in their article on the Birds of Japan (Ibis, 1878, pp. 209–250), only include *Circus spilonotus*, and not the Marsh-Harrier.

In habits the present species, as its name infers, is much more of a marsh species than the

other Harriers, and is generally to be met with in damp swampy localities, especially in large marshes where waterfowl are abundant, and where, during the breeding-season, it makes great havoc amongst their eggs and young. In most parts of Northern Europe it is a regular or a partial migrant, leaving for the south at the approach of the winter; but in many portions of Southern Europe it is found throughout the cold season. It avoids the woods even for the purpose of roosting; for one never finds it there except when passing over from one marsh to another. During the day, when not circling about and quartering the ground in search of food, it will rest on a stone, a post, or even on the ground, and but seldom on a tree; and during the night it usually rests in the dense reed-beds or amongst the willows by the water. In its flight and general appearance it much resembles the Hen-Harrier. It usually flies low, except during passage, when it may not unfrequently be seen at a considerable altitude; and its flight is somewhat uncertain, soft, and gliding. Except during the breeding-season, it is a silent bird; but in the spring both sexes may be heard, the male uttering a clear, rather loud call, somewhat resembling the syllable *keew*, several times repeated, while the female has a call somewhat resembling the word *pee-ep*, rather prolonged, but clear and shrill; as is the case, however, with the call-notes of many birds, it is most difficult to describe its voice by words. The food of the Marsh-Harrier consists of water- and marsh-birds, small mammals, insects, and reptiles; and being comparatively weak in flight, it is seldom able to secure a bird on the wing, but strikes them when on the water or on the ground. It creates great havoc amongst the young and eggs of the various species of waterfowl which breed in marshy localities, chasing the smaller birds off their nests, and plundering those of the larger species when their owners are absent; and it will even take the eggs of the larger Ducks and Geese. It will also catch fish when they are in shallow water, devours frogs and large aquatic insects, mice, moles, &c., and will not unfrequently catch young hares and rabbits. Speaking of its habits, as observed by him in Spain, Colonel Irby writes (Orn. Str. Gibr. p. 34):—"It is to be seen there in vast numbers, particularly in winter. Great quantities remain to breed, sometimes as many as twenty nests being within three hundred yards of one another. These, loosely constructed with dead sedges, vary much in size and depth, and are usually placed amidst rushes in swamps, but sometimes on the ground among brambles and low brushwood, always near water, though occasionally far from marshes. They begin to lay about the end of March, and at that time fly up to a great height, playing about, and continually uttering their wailing cry. The eggs are bluish white, and usually four or five in number; they certainly vary in size and shape, and are often much stained. Like the eggs of all the Harriers that I am acquainted with, and many others of the Accipitres, when blown and held up to the light they show a bluish tinge. I once found a nest containing only one egg, nearly ready to hatch, and saw another with six eggs (three quite fresh and the other three hard sat-on). I believe that, if the first set of eggs be taken, they lay again in a fresh nest, as I found sets of fresh eggs as late as the 2nd of May.

"The Marsh-Harrier is a perfect pest to the sportsman, as, slowly hunting about in front, it puts up every Snipe and Duck that lies in its course, making them unsettled and wild. I have repeatedly seen them flush Little Bustards; but these merely flew fifty yards to the right or left out of the Harrier's line of flight, and settled down again.

"Cowardly and ignoble, they are the terror of all the poultry which are in their districts,

continually carrying off chickens, and, like other Harriers, are most terribly destructive to the eggs and young of all birds.

"On account of these propensities, I never let off a Marsh-Harrier unless it spoiled sport to fire at one. Sometimes, when at Casa Vieja and the Snipe were scarce, we used to lie up in the line of the Harriers' flight to their roosting-places; for they always take the same course, and come evening after evening within five minutes of the same time. Upon one occasion a friend and myself killed eleven, and during that visit accounted for over twenty. I also upon every possible opportunity destroyed the nest and shot the old ones; but it was the labour of Sisyphus, for others immediately appeared. However, there was a visible diminution of their numbers at Casa Vieja. I never saw rats in their nests or crops, and believe they have not the courage to kill them: small snakes, frogs, wounded birds, eggs, and nestlings unable to fly form the main part of their prey. I have seen the Marsh-Harrier hawking over the sea about two hundred yards from the shore, where there was shallow water, but could not see what they were taking."

The nest of this species, like that of the other Harriers, is placed on the ground, or more frequently amongst the dense, half-floating reeds or flags. The nest itself is large, bulky, and somewhat carelessly constructed of dry reeds, flags, and twigs, and is flat and scarcely cup-shaped in the egg-cavity. The eggs, which are deposited in May, are usually four or five, more seldom six in number, and are uniform greenish or blue-greenish white in colour, rather round in shape, and measure from $1\frac{36}{40}$ by $1\frac{19}{40}$ to $2\frac{2}{40}$ by $1\frac{23}{40}$ inch.

The specimens figured are:—on the one Plate a very old male from Transylvania, and an old female from Corsica; and on the second Plate a young male and an ordinary adult female, the former from the Volga and the latter from Spain.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. Leadenhall Market, London (*H. E. D.*). *b*, *c*, ♂, *d*, ♀. Casa Vieja, Spain, February 25th and 26th, 1871, and May 3rd, 1874 (*L. H. Irby*). *e*, ♀. Biguglia, Corsica, April 15th, 1875 (*C. Bygrave Wharton*). *f*. Dobrudscha, July 4th, 1875 (*Schlüter*). *g*. Albania (*H. Barclay*). *h*. Turkey (*Whitely*). *i*, ♂. Ismid, November 18th (*C. G. Danford*). *k*. Ural, 1868 (*Sabanäeff*).

E Mus. H. B. Tristram.

a, ♂. Etawah, India, March 26th, 1869 (*W. E. Brooks*).

E Mus. J. A. Harvie-Brown.

a, ♂. Zah-Tok, Transylvania, May 10th 1874 (*J. A. Harvie-Brown*).

E Mus. C. A. Wright.

a, ♂. Malta, March 21st, 1863. *b*, ♀. Malta, September 14th, 1870 (*C. A. W.*).



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J.Wolf del. E.Neale lith.

Hanhart imp

MONTAGU'S HARRIER.
CIRCUS CINERACEUS

CIRCUS CINERACEUS.

(MONTAGU'S HARRIER.)

Falco cineraceus, Montagu, Orn. Dict. vol. i. sheet K 3 (1802).
Falco cinerareus, Montagu, Trans. Linn. Soc. ix. p. 188 (1808).
Falco cinerarius, Montagu, Orn. Dict. Suppl. fol. F (1813).
Circus cinerarius (Mont.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 9 (1816).
Circus ater, Vieill. Nouv. Dict. iv. p. 459 (1816).
Circus montagui, Vieill. Nouv. Dict. xxxi. p. 411 (1819).
Circus cinerascens, Steph. in Shaw's Gen. Zool. xiii. pt. ii. p. 41 (1826).
Buteo cineraceus (Mont.), Flem. Brit. Anim. p. 55 (1828).
Circus cineraceus (Mont.), Cuv. Règn. Anim. i. p. 338 (1829).
Circus pratorum, C. L. Brehm, Vög. Deutschl. p. 95 (1831).
Circus cineraceus (Mont.), C. L. Brehm. Vög. Deutschl. p. 95 (1831).
Falco cinerascens (Steph.), Barb. Rev. Zool. 1838, p. 221.
Strigiceps cineraceus (Mont.), Bp. Comp. List, p. 5 (1838).
Circus nipalensis, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Circus (*Glaucopteryx*) *cinerascens* (Steph.), Kaup, Contr. Orn. 1850, p. 58.
Strigiceps cinerascens (Steph.), Bp. Consp. Gen. Av. i. p. 33 (1850).
Circus (*Pterocircus*) *cinerascens* (Steph.), Kaup, in Wiegm. Arch. xvi. p. 32 (1850).
Strigiceps pratorum, L. Brehm, Naumannia, 1855, p. 269.
Strigiceps elegans, L. Brehm, ut suprà.
Circus elegans, C. L. Brehm, Vogelfang, p. 33 (1855).
Strigiceps cinerascens (Steph.), Fritsch, Vög. Eur. p. 48 (1858).
Circus pygargus, Sharpe, Cat. Accipitr. Brit. Mus. p. 64 (1874, nec Linn.).

Busard cendré, French; *Albanella minore*, Italian; *Bü-ghadam*, Maltese; *Wiesenweihe*, *Bandweihe*, German; *de graauwe Kuikendief*, Dutch; *Graa Kjærhög*, Danish.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 33; Kjærb. Orn. Dan. taf. v. Suppl. taf. iii.; Fritsch, Vög. Eur. taf. 9. fig. 7, taf. 10. fig. 3; Naumann, Vög. Deutschl. taf. 40; Sundevall, Svensk. Fogl. pl. 62. figs. 2, 3; Gould, B. of Eur. pl. 35; id. B. of G. Brit. i. pl. 27; Schlegel, Vog. Nederl. pls. 18, 19; Roux, Orn. Prov. pls. 18, 19; Susemihl, Vög. Eur. taf. 38, 38 *a*.

♂ *ad.* capite, collo, pectore, dorso, cum scapularibus et tectricibus alarum cæruleo-cinereis, suprà saturatior: supracaudalibus ad basin albis: rectricibus centralibus dorso concoloribus, reliquis pallidioribus et ferrugineo-aurantiaco fasciatis: remigibus primariis nigris, secundariis dorso concoloribus et nigro transfasciatis: pectore imo et corpore reliquo subtùs cinereo-albis, castaneo striatis: rostro nigro-corneo: cerâ, iride et pedibus flavis.

♀ *ad.* suprà saturatè fulvo-fusca, ferrugineo-aurantiaco notata: remigibus fuscis griseo tinctis et nigro-fusco fasciatis: supracaudalibus imis albis, rufescenti notatis: rectricibus centralibus griseo-fuscis, nigro-fusco fasciatis, reliquis cinereo-albis rufescenti tinctis et ferrugineo-fusco transfasciatis: corpore subtùs pallidè ochraceis ferrugineo-fusco striatis.

Juv. suprà saturatè chocolatino-fuscus, pilei plumis et tectricibus alarum rufescente ochraceo marginatis et apicatis, remigibus inconspicuè fasciatis: caudâ sicut in fœminâ adultâ picturatâ, sed rectricibus lateralibus ochraceo-ferrugineis nigro-fusco fasciatis: gulâ, gutture et corpore subtùs pallidè ochraceo-ferrugineis immaculatis: capitis lateribus saturatè fuscis, maculâ auris ochraceo-ferrugineâ.

Adult Male (Malta, April). Head, neck, breast, back, and wing-coverts ashy blue-grey, much darker on the upper parts; upper tail-coverts white at the base, bluish ash towards the tip; tail like the back, except the two outer rectrices on each side, which are paler and barred with pale ferruginous, the two next barred with darker grey tinged with reddish; primaries black; secondaries short, coloured like the back, with two hidden and one conspicuous blackish bars; underparts below the breast greyish white, striped with chestnut-red; bill blackish horn; cere, iris, and legs yellow. Total length about 17 inches, culmen 1·05, wing 14·8, tail 10·0, tarsus 2·5.

Adult Female (Malta). Upper parts dark warm brown varied with light rusty rufous; quills brown with a greyish tinge, barred with blackish brown; lower portions of the upper tail-coverts white, striped and blotched at the tip with rufous; central rectrices greyish brown, barred with blackish brown, the outer rectrices white or greyish white tinged with rufous and barred with dark reddish brown or blackish brown; underparts warm pale ochreous, striped with rusty brown; under surface of the quills white or greyish white, barred with blackish.

Young (Volga). Upper parts almost uniform dark chocolate-brown, except on the crown and wing-coverts, where the feathers are margined or tipped with warm light rusty red; quills almost uniform, without barrings; tail as in the adult female; but the outer rectrices are pale ochreous rufescent, barred with blackish brown; chin, throat, and underparts generally pale ochreous rufescent; sides of the head dark brown, with a band of pale rufescent passing round the lower part of the ear-coverts.

Obs. The present species appears to be more especially subject to melanism; and one not unfrequently sees examples of a uniform blackish brown colour. I do not possess one in this peculiar form or variety of plumage, but have seen several from Spain, where this dark variety appears to be more frequently met with, perhaps, than elsewhere in Europe. A very fine specimen, which was formerly in the possession of Mr. Howard Saunders, is now in the British Museum.

The range of this Harrier is tolerably wide; for it is found throughout Europe, except in the more northern countries, in Africa as far south as the Cape colony, and in Asia as far east as China.

In Great Britain it is far less numerous than it used formerly to be, this being more especially the case in the fen-country in the east of England; for since the reclamation of so many of the fens it has gradually decreased in numbers until it now only breeds there occasionally. Mr. Stevenson writes (B. of Norf. i. p. 39), in Norfolk it is "certainly less rare than is generally supposed; and whilst the Hen-Harrier has ceased almost entirely to nest even in the eastern portion of the county, the Ash-coloured Harrier, as this bird is also termed, has been known to breed with us in several instances of late years, though not regularly enough to

be still looked upon as a resident species. As before remarked also, prior to the entire drainage of the south-western fens, this Harrier was not only the most plentiful in that locality, but was the last to quit altogether those once favourite haunts. Probably the last eggs of this species known to have been laid in that district were taken from a nest in Feltwell fen on the 9th of June 1854, the particulars of which are recorded by Mr. Alfred Newton in his 'Ootheca Wolleyana,' p. 149, with many other interesting notes relating to the ornithology of this and adjoining counties. In July 1858, a nest, which proved to be of this species, was discovered on a rushy marsh near Ransworth decoy. The old birds had been watched by the broad-man flying backwards and forwards with food; and on making a search he soon found the nest containing three young ones. Of these only one was feathered, the next partly feathered mixed with down, and the smallest covered with down only, showing that the hen bird, as is often the case with the Raptorial tribe, had begun sitting after laying the first egg."

Mr. More says (Ibis, 1865, p. 14) that until recently the present species appears to have been "a regular summer visitant to some of the southern and eastern counties. Formerly found nesting in Devonshire by Montagu, and still breeds occasionally in Somerset, Dorset, Kent, and Norfolk. Extinct in Devon, Suffolk, Cambridge, Huntingdon, and Lincoln. In Shropshire Mr. Shaw once obtained a female that had been recently sitting; and a nest, found on the Whitby Moors, near Scarborough, is recorded in Dr. Morris's 'Naturalist' for 1855. Mr. Hancock writes that he has two young birds which were bred in Cumberland." To this I may add that it has recently been found breeding in the Isle of Wight by Mr. Howard Saunders; and Lord Lilford writes to me as follows:—"Montagu's Harrier has bred in my recollection in the neighbourhood of Lilford, Northamptonshire, but was never, to my knowledge, common in that county. I have on several occasions observed it in Cambridgeshire, and once or twice in Norfolk, whence I have obtained nestlings alive."

Mr. Clapham informs me that a nest and both old birds were taken on Cross-Cliff Moor, near Bridlington, Yorkshire, late in June 1871. It is otherwise, Mr. Hancock says (B. of North. & Durh. p. 19), "a rare species in the north of England, where it was a resident, but is now only a casual visitant. Selby mentions the occurrence of three specimens—two killed in Northumberland, one in Durham. There are four individuals in my collection—two taken in Northumberland, and two in Durham. One of these, a fine mature male, was shot on Morpeth Common, July 1829; two, which are in the first or nest-plumage, were shot at Wolsingham Park, in the county of Durham, 1835, and had undoubtedly been bred in that neighbourhood; and in the same year a fourth was killed in Northumberland—a male, and a fine example of the dark-grey variety, being of a uniform black-grey or smoke-colour, entirely without markings."

It appears rather doubtful if it breeds in Scotland, where it is everywhere a rare species. Mr. Robert Gray writes (B. of W. of Scotl. p. 54):—"On the western mainland this is certainly the rarest of the Harriers. It is quite possible, however, that, from its strong general resemblance to the Hen-Harrier, it may have been overlooked. Yet, judging from the comparative numbers sent to the city taxidermists for preservation (no mean criterion), it falls greatly short of the Hen-Harrier—a fact scarcely to be wondered at when we take into account that it is a southern species in its geographical range, inclining eastwards as it recedes from the shores of England. Those I have seen from west-country moors were mostly females and young males. In September

1867 I observed, as I believed, this species on one or two occasions on the islands of North Uist, Benbecula, and South Uist, where opportunities were afforded me of contrasting the flight of the two together. Montagu's Harrier appeared to me to be a wilder and more impulsive bird, and, from its lightness, to be quicker in its movements, dashing sometimes impetuously to the ground (not heavily, like the common Harrier), then rising with a sudden bound to some height, and again pouncing in a straight line on its prey. When flying over a tract of country it may be distinguished, too, by its different flap of wing and general movements, which are more buoyant than those of the shorter-winged bird. The late James Wilson, of Woodville, in his 'Voyage round Scotland,' mentions having seen a specimen of this bird, which had been shot in Caithness, in the museum of Mr. E. S. Sinclair, surgeon, in Wick; and I find the species mentioned by the late Charles St. John, who states in his 'Tour in Sutherland,' vol. i. p. 122, that 'it breeds near Bonar Bridge, Mr. Dunbar having taken a nest and killed the old birds in that district.'" Mr. J. A. Harvie-Brown, however, greatly doubts if this bird ever breeds in Sutherland. In Ireland it appears only to have occurred twice, once near Bray and once at the Scalp in county Wicklow.

It has not been met with in Norway, and is of very rare occurrence in Sweden. Professor Nilsson states that it has occurred three or four times in Skåne; but Mr. Meves says that only once is it with certainty known to have been obtained in Sweden, at Hjuleröd, on the 20th August 1841, this specimen being now in the Lund Museum. It is only of occasional occurrence in Finland; and Von Wright says that there is a young female in the Finnish collection obtained on the 10th May 1841. Mr. Sabanäeff writes that in Russia it is not very rare in Jaroslaf; and he further writes that it was observed by him in the Ural, near Ekaterinburg, and is most numerous in the Perm steppes. Eversmann states that it does not occur in the Kazan Government; but Bogdanoff records it from there. According to Mr. Taczanowski it is found throughout Poland, but is less numerous than the Hen-Harrier, with which species it arrives and departs. In Germany it is, comparatively speaking, rare in the breeding-season. Borggreve states that it breeds in Mecklenburg and Anhalt; Mr. Schlüter received eggs with the birds from near Bittefeld; and Gloger speaks of it as being tolerably common in Silesia. Mr. C. Sachse informs me that it but rarely occurs in Rhenish Prussia on passage, and he has not known it to breed there. Naumann says that it is a migrant to Germany, arriving in March and leaving in October, but seldom remaining, during severe winters. It is there not so common as the Hen-Harrier, but, it would seem, is not so rare as has been supposed. Mr. J. Collin says that it is rare in Denmark. Bonnez informed him that it occurs in the Grenaa district, and probably breeds there, as it is found throughout the summer; but he considers that it must have been a mistake on the part of Mr. Bonnez. According to Melchior one was shot in September 1823 near Gisselfeldt. In Holland and Belgium it is tolerably common during the breeding-season, though much less numerous than the Hen-Harrier; but in some parts of France it is said to be quite common; and M. Barbier Montault speaks of having seen them collecting in thousands, to roost in company, near Loudun, in the Department of Vienne, after the breeding-season. M. Adrien Lacroix says that it is found during the summer in the French Pyrenees, where it is not uncommon. It arrives about the middle of March or beginning of April, and leaves again in September or October. Professor Barboza du Bocage includes it in his list of the birds

of Portugal with a query; but in Spain it is common and resident. Colonel Irby says (Orn. Str. Gibr. p. 32):—"Near Gibraltar this Harrier is not often met with; near Seville they are very common, and dark specimens, some of them complete melanisms, are frequently procured. Near Lixus, in Morocco, at the end of April, I found a regular colony (there must have been fifteen or twenty pair) on a salt marsh across the river. I had no time to go round and examine the ground, and could not cross the river at that place; but we could see with my telescope the hen birds sitting dotted about the marsh. The males took a particular line across our side of the river; so I shot three for identification." Lord Lilford also informs me that he found it very abundant in the great marshes of the Guadalquivir, below Seville; and he remarks that the dark chocolate-coloured variety is often seen there. It occurs in Savoy, and, Bailly says, in all probability is more common than it is usually supposed to be; and in Italy, though it is the rarest of the Harriers, it is very generally distributed throughout the country. It is found in Sicily, but is principally met with on passage; and Salvadori writes that he met with it rather frequently on the south-west shore of the Lake of Cagliari, in Sardinia. In Malta it appears at the same seasons as the other Harriers, but, Mr. Wright says, is much less common; and in Greece and the Ionian Islands it is also the least numerous of the Harriers. Lord Lilford states, however, that it is not rare in Epirus in winter, and the great marsh of Livitazza is a favourite haunt of this species. Dr. Krüper records it as a winter visitant to Greece, and as being tolerably common, but not occurring there in the summer. In Southern Germany, however, this Harrier is much commoner. Dr. Fritsch writes (J. f. O. 1871, p. 181) that it is commoner than the Hen-Harrier in Bohemia, and immature birds are often killed in the autumn, though it is but rarely seen in fully adult dress. Lokaj states that it has bred near Rumburg. Messrs. Danford and Harvie-Brown, who met with it in Transylvania, write (Ibis, 1875, p. 296):—"Very common in the Mezöség, where we found them nesting among reeds, the nest being sometimes considerably above the ground. We also met with them at Szent Mihály; and they are common near Klausenburg, but not so abundant in the lower parts of the country." Mr. Farman says that it is doubtful if it occurs in Bulgaria, for he never succeeded in obtaining a specimen; but it is certainly found in the Dobrudscha, and near Constantinople, where it has been obtained by Mr. Robson. In the south of Russia it is by no means rare, and is resident. It is not only found in the western districts, but right onto the southern spurs of the Altai. It occurs in Asia Minor and in Palestine. Canon Tristram obtained it twice near Tiberias and on the plains of Gennesareth in the spring; and though he did not shoot it in the winter, he has no other grounds for supposing it to be migratory.

It Africa it is found as far south as the Cape colony. It is not very common in North-east Africa, or, at least, in Egypt, where, Mr. E. C. Taylor says, it is less numerous than either of the other two species of Harriers. Von Heuglin says that he observed it in Abyssinia, Sennaar, and Kordofan from November to the middle of April, and that it doubtless also occurs in Egypt on passage. In Semien he obtained one in the highest portion of the mountains; and he also observed it in West Abyssinia in the middle of April. Mr. Blanford says that he shot a young male close to the coast in Samhar, about twenty-five miles north of Massowa, in Abyssinia; and Antinori writes (J. f. O. 1866, p. 194) that it is common in Sennaar after the rainy season, and he killed a young male in November 1859 near the town of Sennaar. It is found in North-west

Africa, and occurs, Loche says, in many parts of the provinces of Algiers and Constantine. According to Favier (*fide* Colonel Irby, Orn. Str. Gibr. p. 32) some of these birds "remain to breed near Tangier, where they are nearly as common as the Marsh-Harrier, being seen during passage on all sides in pairs." It has been said by Berthelot to have occurred in the Canaries; but Mr. Godman remarks that he never met with it in the Azores, Madeira, or the Canaries. On the west coast of Africa it is found down to the Cape. Mr. Gurney says that he has seen examples of this Harrier which were obtained by Mr. Andersson at Objimbinque, in Damara Land, and in Ondonga, Ovampo Land; and Mr. Layard writes (B. of S. Afr. p. 34):—"The ash-coloured Harrier is rare in South Africa. Mr. Atmore procured a fine adult male at Swellendam; and I shot an adult female and the young bird mentioned above near the Observatory at Cape Town, below which is a marsh much frequented by Harriers of several descriptions. I also killed a fine male in the crater of an extinct volcano at Johanna, one of the Comoro Islands, where I saw many specimens."

In Asia Montagu's Harrier is found as far east as China. It occurs in Persia; and Major St. John says that he shot one at Shápúr about the end of April 1864. Mr. Abbott procured it at Trebizond; and in India, Dr. Jerdon states, it is abundant and migratory throughout the country. Mr. Holdsworth also records it from Ceylon, where, however, it is not so numerous as *Circus swainsoni*. It was not met with in Mongolia by Colonel Prjevalsky; and I do not find it recorded from Siberia; but Père David says that it occurs, though rarely, in Northern and Central China, and Mr. Swinhoe met with it on the Yangtsze river.

In habits the present species does not appreciably differ from the Hen-Harrier; but it may readily be distinguished from that by its more slender form, by its proportionally longer wing, and by its quicker movements and greater buoyancy on the wing. It feeds on insects of various kinds, reptiles, field-mice, small birds, birds' eggs, &c., is said to evince a great partiality for insect food and small reptiles, especially lizards; and Naumann states that it devours moles, and will attack and kill young hares. It flies somewhat low, quartering the ground carefully, and pounces down on its prey like the Hen-Harrier. After the breeding-season it is said to be found in large flocks, numbering, according to M. Barbier Montault, several hundreds, and even thousands, collecting together towards evening to roost in company. It roosts on the ground amongst the grass, standing corn, or heather, seldom, if ever, perching on a tree or bush; and, like its allies, it is essentially a bird of the plains and open country. Mr. Wolley says (Ootheca Wolleyana, p. 148) that he was told that the male selects the nesting-place, the female approving or disapproving of it as she thinks fit, and the male comes to feed his mate, she frequently going to meet him, turning on her back and catching the prey thus brought her, which is, however, occasionally dropped on the nest. He adds that in the fen country this Harrier is migratory, whereas the Marsh-Harrier and Hen-Harrier are resident.

The nest of this Harrier, like that of its allies, is placed on the ground, and is made of leaves of dried grass, being of less-coarse materials than, but not so slightly constructed as, that of the Hen-Harrier; and the eggs, from four to six in number, are usually deposited late in May. They are bluish white in colour, and resemble the eggs of the Hen-Harrier, but are smaller in size, those in my collection varying from $1\frac{18}{40}$ by $1\frac{10}{40}$ inch to $1\frac{25}{40}$ by $1\frac{12}{40}$ inch.

Mr. Howard Saunders, who found the nest of this Harrier in the Isle of Wight, gives (in

the 'Field' for the 2nd September 1875) some interesting notes respecting its nesting-habits. He describes the nest as being in a clearing about four feet in diameter amongst the gorse, and consisting of a mere hollow in the ground lined with dry grass, with an outside border of fine heather twigs. It contained three eggs, two of which were taken, and the third left. Another egg was afterwards laid; but only one was hatched; and the young bird was taken, and subsequently sent to the Zoological Gardens, where it died. Speaking of the habits of the parent birds, Mr. Saunders writes as follows:—"I visited the nest frequently, and had excellent opportunities of observing the male bird, which was an unmistakable Montagu, his dark colour and striated flanks and abdomen being clearly visible with a glass. Early morning and towards evening were the best times for seeing him; but he seemed to frequent a portion of the downs at some distance from the nest; and although when the female had been disturbed from the nest and was on the wing for some time he would generally make his appearance, yet in the course of many hours' watching at different times I never observed him approach the nest, as if to bring food, or taking his turn at incubation. From observations made abroad, I fancy that few, if any, of the males of the Circinæ do so; certainly I never flushed a male Montagu or a male Marsh-Harrier (*Circus æruginosus*) from the nest; and I have visited some scores of them. Towards evening the female, when put off the nest, would sometimes, after flying in repeated and gradually widening circles, begin to quarter the ground regularly for food; and I have occasionally seen her settle down for a short time, doubtless to devour whatever had been seized; but until the first egg was hatched she was almost always on the nest at the time of each visit. On leaving the nest she generally circled over the valley, taking wide sweeps over the coomb of the hills; and after a short disappearance she would suddenly come over the brow from some unexpected quarter, so that any attempt at concealment, except in a place where one could see nothing one's self, would have been fruitless; but at a distance of some 200 yards, or rather more, was a convenient line of gorse, whence we could easily observe her with our glasses; and our presence there did not seem to interfere with her return to the nest. When Rooks were about, and particularly if they crossed the line of the nest, she displayed great anxiety, and occasionally made a dash at one or two of those nearest, sometimes uttering a cry something like that of a Kestrel, but feebler and more querulous. There was reason for her antagonism; for both Rooks and Carrion-Crows (there are plenty of the latter in the island) showed by their movements that they were perfectly aware of the position of the eggs; and I soon learned to dread them more than any prowling cowherds. It was necessary to run some risk to ascertain when and how many eggs were laid; but my movements were always made as quietly as possible. Several times, by crawling on hands and knees for some distance, and availing myself of a small tunnel in the lower part of the gorse, I got to within a couple of feet of the sitting bird; and on two occasions a small bird, a Titlark I think, gave an alarm-note, at which the bird rose. A few seconds more, and I should have actually seen her on the nest; for only a few inches separated me from the clearing. The Titlark, or whatever it was, frequented the same bare space; but it certainly had no nest there after the fashion of the Spanish Sparrows (*Passer hispaniolensis*), which breed in colonies in the foundations of the nests of Eagles and other large Raptores. It was very interesting to watch the movements of the Harrier when returning to her nest: the wide circles which had enabled her to take in the position of any large object on the down gradually narrowed; then

quartering would begin again, to be succeeded by more circles, till every one might be expected to be the last. Then, perhaps, she would change her mind, and go off for another series of wide flights; but when the moment came there was no hesitation or hovering, but a sudden closing of the wings as she swept over the spot, and she was down in so stealthy a manner that, if the eye were taken off her for a second, it was impossible to say whether she had settled, or merely gone over the brow of the hill again."

The specimens figured are the adult male and female above described. I purposed figuring also the blackish brown variety, but was unable to borrow one; and Mr. Wolf, who has kindly done the sketch for me, was unable go to the British Museum to figure a fine specimen which is now there.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Malta, April (*C. A. Wright*). *b*, ♀. Malta (*Whitely*). *c*, *juv.* Volga (*Möschler*). *d*, ♂. Southern India.

E Mus. C. A. Wright.

a, ♂. Malta, April 8th, 1869. *b*, ♂, *c*, ♀. Malta (*C. A. Wright*).



J.Wolf del

W.Hart Lith.

HENHARRIER.

CIRCUS CYANEUS.

CIRCUS CYANEUS.

(HEN-HARRIER.)

The Blue Hawk, Edw. Gleanings, i. p. 33, pl. 225 (1758).
Accipiter falco torquatus, Briss. Orn. i. p. 345 (1760).
Falco montanus cinereus, Briss. Orn. i. p. 355 (1760).
Accipiter lanarius cinereus, Briss. Orn. i. p. 365 (1760).
Falco cyaneus, Linn. Syst. Nat. i. p. 126 (1766, ex Edw.).
Falco pygargus, Linn. Syst. Nat. i. p. 126 (1766, ex Martin).
Oiseau St. Martin, Buff. Hist. Nat. Ois. i. p. 212 (1770).
Soubuse, Buff. Hist. Nat. Ois. i. p. 215, pl. ix. (1770).
Aquila variabilis, Schrank, Fauna Boica, i. p. 108 (1798).
Circus gallinarius, Savig. Syst. des Ois. de l'Egypte, p. 31 (1810).
Accipiter variabilis (Schr.), Pall. Zoogr. Rosso-As. i. p. 364 (1811).
Pygargus dispar, Koch, Baier. Zool. i. p. 128 (1816).
Circus ægithus, Leach, Syst. Cat. M. & B. Brit. Mus. pp. 9, 10 (1816).
Falco strigiceps, Nilss. Orn. Suec. i. p. 21 (1817).
Circus cyaneus (L.), Boie, Isis, 1822, p. 549.
Circus pygargus (L.), Steph. in Shaw's Gen. Zool. xiii. pt. 2, p. 41 (1826).
Circus cinereus, C. L. Brehm, Vög. Deutschl. p. 94 (1831).
Buteo cyaneus (L.), Jenyns, Man. Brit. Vertebr. p. 89 (1835).
Strigiceps pygargus (L.), Bp. Comp. List, p. 5 (1838).
Strigiceps cyaneus (L.), Bp. Consp. Gen. Av. i. p. 35 (1850).
Circus nigripennis, C. L. Brehm, Vogelfang, p. 33 (1855).
Circus pallens, C. L. Brehm, ut suprà (1855).
Strigiceps nigripennis, Brehm, Naumannia, 1855, p. 269.
Strigiceps pallens, Brehm, ut suprà.
Strigiceps cinereus, Brehm, ut suprà.

Breid-air-toin, *Clamhan-luch*, Gaelic; *Busard St.-Martin*, French; *Cenizo*, Spanish; *Albanella reale*, Italian; *Bü-ghadam-abiad*, ♂, *Bü-ghadam*, ♀, Maltese; *Bou-hasin*, Moorish; *Kornweihe*, *blaue Weihe*, German; *Blaauwe Kuikendief*, Dutch; *Blaafalk*, *Kornfalk*, Danish; *Blaa-Kjærhög*, Norwegian; *Kärrhök medhalskrage*, Swedish; *Sinertäva-suohaukka*, Finnish; *Meshelovka*, *Lun-polevoy*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 443, 459, 480; Werner, Atlas, *Rapaces*, pl. 32; Kjærb. Orn. Dan. taf. 5, Suppl. taf. 3; Frisch, Vög. Deutschl. taf. 79, 80; Fritsch, Vög. Eur. taf. 9. fig. 6, taf. 10. fig. 8; Naumann, Vög. Deutschl. taf. 38. fig. 1, taf. 39. figs. 1, 2; Sundevall,

2

Svensk. Fogl. pl. 28. figs. 1, 2; Gould, B. of Eur. pl. 33; id. B. of G. Brit. i. pl. 26; Schlegel, Vog. Nederl. pls. 15, 16, 17; Susemihl, Vög. Eur. taf. 37.

♂ *ad.* suprà cærulescenti-canus, occipite albo maculato: supracaudalibus albis: rectricibus centralibus canis, lateralibus canescenti-albis fusco transfasciatis: remigibus primariis nigricantibus: gulâ, jugulo et pectore anteriore pallidè cærulescenti-canis: corpore reliquo subtùs, subalaribus et remigibus subtùs ad basin albis: rostro nigro, cerâ et pedibus luteis: iride luteâ.

♀ *ad.* major: fronte et lineâ superciliari cervinis: capite et collo saturatè fuscis rufescenti cervino et albo cervino striatis et notatis: corpore suprà fusco vix rufescenti cervino notato: remigibus suprà fuscis, subtùs albis fasciis transversis nigris: supracaudalibus albis vix rufescenti guttatis, caudâ saturatè fuscâ, rectricibus centralibus griseo-fusco et lateralibus rufescenti cervino transfasciatis: corpore subtùs cervino, maculis longitudinalibus fuscis et rufescenti-fuscis notato.

Adult Male (Archangel). Entire upper parts ashy blue-grey, slightly darker on the back, and lighter and bluer on the head, wings, and tail; nape mottled with white, primaries blackish; upper tail-coverts white; central rectrices ashy grey; lateral ones inclined to white with small transverse brownish bands; throat like the head, the breast becoming paler until the lower breast and the rest of the underparts are white; under wing-coverts and the basal portion of the under surface of the quills pure white; cere, iris, and legs yellow; bill dark blackish horn. Total length about 18 inches, culmen 1·1, wing 13·4, tail 8·9, tarsus 2·62.

Adult Female (Leadenhall Market). Forehead and an irregular streak over the eye buff; head and neck deep brown, striped and marked with rufescent buff and buffy white; upper parts generally dark brown, less profusely marked with warm buff; upper tail-coverts white with a few rufous dots; tail dark brown, the central rectrices broadly barred with greyish brown and the lateral ones with rufous buff; the terminal portions of the tail dark brown with a narrow light tip; underparts buff broadly striped with dull brown and reddish brown; under wing-coverts similarly coloured but more spotted than striped; under surface of the wings white barred with blackish grey; iris brown; legs and cere yellow; bill dark horn. Total length about 21 inches, culmen 1·1, wing 15·0, tail 10·6, tarsus 2·85.

Young Female (S.E. Ural, 29th July). Differs from the adult female in being very much more rufous in plumage, especially on the underparts, which are warm rufous buff striped with reddish brown; and the tail is broadly tipped with pale rufous.

Young Male (Sweden). Differs from the young female in having the plumage paler rufous in general tone of colour.

The Hen-Harrier is found throughout Europe, ranging southward into North Africa and eastward into China and Japan.

In Great Britain, though not so numerous as it used formerly to be, it is still by no means rare in many parts, and breeds in the northern portions of our isle. Professor Newton (in Yarr. Brit. B. 4th ed. i. p. 134) writes that "though formerly numerous in the fenny district known as the Great Bedford Level, it was probably never a very common bird in England. Owing perhaps to its greater adaptability to circumstances, however, it was more generally distributed in the breeding-season than the preceding species; and even a few years since, the information gathered by Mr. More shows that it then continued to breed regularly in several English counties—Devon,

Somerset, Dorset, Gloucestershire, Monmouthshire, Lincolnshire, Yorkshire, Durham, and Cumberland, as well as in both North and South Wales. Occasionally, too, nests were then found in Hampshire, Sussex, Kent, Norfolk (in which county four fledgelings were taken in July 1870), Shropshire, and Northumberland; but it had ceased to breed in Wiltshire, Suffolk, Cambridgeshire, Huntingdonshire, Northamptonshire, and Nottinghamshire, though in some of these only very recently."

Lord Lilford writes to me as follows:—"The Hen-Harrier was, in my recollection, by no means a very uncommon bird in our part of Northamptonshire; but I have not heard of its occurrence in that county for several years past. I have seen it on the wing in Norfolk, Cambridgeshire, and Devonshire, whence I have received nests and eggs;" and Mr. Stevenson, referring to the occurrence of this Harrier in Norfolk, remarks (B. of Norfolk, i. p. 37):—"At no time so numerous in this county as the last species, at least as regards the district of the broads, the Hen-Harrier can be classed only amongst those migratory species which remain, in rare instances, to breed in Norfolk. Messrs. Sheppard and Whitear thus speak of its breeding in the channel fen at Barton:—'We have more than once thought ourselves in danger of being attacked by it, when we had approached the place where undoubtedly its nest was concealed;' and Mr. Lubbock says:—'This Hen-Harrier always breeds here in a few instances, although not a bird of frequent occurrence. Many years back I have known of its breeding at Surlingham.' For the last eight or ten years, however, I have known of but one instance of its nesting even in such localities as the Marsh-Harrier and Montagu's still frequent; and although adult females (the Ringtail Harrier of some authors) and immature specimens occur nearly every year, these are most probably spring and autumn migrants, from their appearance invariably between October and March, and for the most part near the coast. The adult male, in its delicate bluish-grey plumage, has been long considered a rarity in this county; the only one that I had heard of for some years prior to 1859 (now in my collection) was shot at Ranworth in November of that year; and a few days later an adult female, most probably the companion bird, was taken close by, at Horning, and, being only winged, was sent to Mr. J. H. Gurney, who still has it alive in his aviary."

In Northumberland and Durham, Mr. Hancock writes (B. of North. and Durh. p. 19), it is "a casual visitant. This is the commonest of the genus in these two northern counties; but, like the preceding species, it has now almost succumbed to the zeal of the gamekeeper. Mr. William Proctor, of Durham, informs me that it was common, and bred at Hedley Edge, on the Brancepeth estate, about thirty years ago. I took the eggs, four in number, on the Wemmergill Moors, in 1823. I fear it can no longer be considered a resident in the district. It is still occasionally shot, though I have not seen a single individual for several years. The late Mr. R. R. Wingate informed me that his father remembered when the Hen-Harrier bred on the Newcastle Town Moor."

According to Mr. Robert Gray (B. of W. of Scotl. p. 52), "this is a very common species on all the islands of the Outer Hebridean group, and also throughout the inner islands, Skye, Islay, Mull, Jura, etc., where it was known by the Gaelic name of Clamhan-luch, signifying Mouse-Hawk. I have seen twelve or fourteen specimens in one day on Benbecula and North Uist, and likewise in South Uist, where its hunting-grounds are of a similar nature. The flight of this

bird is peculiarly buoyant, and occasionally very graceful, as it surmounts a hillock or a clump of rocks, sweeping down the other side with contemptuous ease. Sometimes, when hungry, it flaps slowly above a grass-field, or patch of growing corn, hanging on wing for a second or two before descending somewhat clumsily on its unlucky prey; at other times it sails speedily over the ground, content to stoop at any thing which comes in the line of its flight. This species, in such districts as the chain of outer islands, has the habit of hunting over the same ground for days in succession, appearing regularly at the same hour, aud going through its evolutions so methodically that a specimen can easily be obtained by concealing one's self at a convenient place. I noticed this habit particularly on Benbecula and North Uist, where some grass-fields lay near the shore."

It is found in Shetland in the winter, and Dr. Saxby once met with it breeding on the island of Yell. In Ireland, according to Thompson, it is pretty generally distributed, and its nest has been found in various suitable localities: but by Mr. Walters's account (*fide* Professor Newton, *l. c.*), it is of considerable rarity in the eastern portion, though he has known it to breed on the Wicklow mountains. It has not been met with in the Færoes, but is not uncommon in most parts of Scandinavia. Mr. Collett states that it is found here and there throughout Norway up to Finmark. Near Christiania it is most frequently seen on the spring passage, but does not breed there; and though it ranges up to East Finmark, he only knows of one nest having been obtained in Hedemark. Wolley, however, found it breeding in Lapland considerably above lat. 68° N. In Sweden, according to Professor Nilsson, the Hen-Harrier is met with on the spring and autumn passage, chiefly in September, October, and November, and less frequently in March and April. He saw one near Nöbbeloff on the 1st February 1854, but it was rare at that season. I did not observe it when in Finland; but Von Wright informed me that, though not numerous, it is generally distributed, and there is a specimen in the Helsingfors Museum from Muonioniska, Lapland.

It appears to be tolerably common in Northern Russia; for most collections from there contain examples, and Meves found it on all the large marshes in the north of Russia visited by him, as, for instance, at Novaya Ladoga, Wiutegra, Archangelskoi, and Archangel. Messrs. Seebohm and Harvie-Brown met with it on the Petchora, and write (Ibis, 1876, p. 111), "We saw the first Hen-Harrier on the 24th May, and continued to see them almost daily as long as we remained at Ust Zymla. We occasionally met with them on our voyage down the river, and on the tundra as far north as Stanavoialachta." Sabanäeff says that it is found throughout Central Russia, being especially numerous in the Government of Tula. He also met with it commonly in the Ural. In Poland, according to Mr. Taczanowski, it is plentiful in the summer, arriving early in March and disappearing altogether by the end of October. In some seasons the young birds are very numerous. Some few breed in North Germany; and it is found there also on passage. In mild weather stragglers remain throughout the whole winter; but, as a rule, it passes south for that season.

In Denmark, Mr. Collin says, it is rare; he gives many instances of its occurrence there, chiefly in the late autumn and early portion of the winter; but he does not cite any notice of its having been found nesting in that country, except that he was informed by Mr. Brüel that it breeds here and there on the heaths of Jutland. In a letter lately received from Mr. A. Benzon,

of Copenhagen, this gentleman informs me that he only knows of seven or eight Danish-killed specimens, one of which, an old male, shot on the Geel Sö, a few miles from Copenhagen, is in his collection. It certainly breeds, he adds, in Jutland, and here and there in Komagre; but there are no Danish-taken eggs in any collection he has seen. It is found in suitable localities in Western Germany, and inhabits Holland in summer, but not very commonly, occurring in North Brabant, Gelderland, and Drenthe; Baron Fallou states that it is rare in Belgium during the summer. He saw it several times near Namur.

In France it is principally met with in the northern districts; but, according to M. Adrien Lacroix, it breeds in the French Pyrenees, arriving early in the spring, and in the autumn large numbers pass on their journey southward. During mild winters a few stragglers remain throughout the winter near Toulouse. It is said to occur in Portugal and in Spain; but it is by no means so common as its allies in the latter country. Colonel Irby writes (Orn. Str. Gibr. p. 32):—"On the Spanish side of the Straits, though a resident bird, the Hen-Harrier is most frequently seen in winter; but their numbers fluctuate greatly. I observed more in the winter of 1871–72 than at any other time, particularly about Casa Vieja, seldom, however, coming across an old male." Lord Lilford, on the contrary, found the males more numerous than the females; for he writes to me as follows:—"We found this species very common in May and June 1876, in the province of Santander, and were struck by the great numerical preponderance of male birds. This of course is partially accounted for by the fact that the females were on their nests; but I do not recollect to have seen more than one of the latter sex, whilst hardly a day passed without our noticing two or more males in those parts of the country suited to their habits."

Passing eastward, again, I find that it is met with in Savoy, principally from October to the commencement of the severe weather, and in the early spring of the year. In Italy it is not very abundant on the mainland; but it is a common winter visitant to Sardinia, and occurs also in the large marshes of Sicily. Mr. C. A. Wright says that it visits Malta at the same time as the Pallid Harrier, and that, curiously enough, though he has examined as many as thirty females in one season, he never saw one single adult male there. Lord Lilford writes to me, "I have shot this species occasionally in Epirus, where it is common during the winter months, frequenting the marshes. All the Harriers are great devourers of eggs; and I have killed one of the present species with its mouth full of fresh yolk; in the crop of another I found the remains of a Water-Rail and a shrew mouse almost entire." Dr. Krüper informs me that, while often seen in Greece in winter, it is not found in summer, and breeds neither there nor in Asia Minor, though it nests on the large plains of Macedonia.

In Southern Germany it is but sparingly met with, young birds being more frequently procured than adult ones. Dr. Fritsch says that it probably breeds in Bohemia, though he cannot speak with certainty, as its nest does not appear to have been taken. The late E. Seidensacher informed me that he had obtained it now and again in Styria; and Von Tschusi Schmidhofen records it from Austria. On the Lower Danube and in Turkey it is chiefly replaced by the Pallid Harrier, especially during the summer months; but Mr. Farman says, "on the moors to the eastward of Shumla, Hen-Harriers are extremely numerous during the autumn months; but at no other time of the year have I noticed them. At that season

I have occasionally seen as many as thirty and more at a time hovering over and hunting the country; but they appeared to be mostly birds of the year."

In Southern Russia it is said by several observers to be very common; and Mr. Goebel states (J. f. O. 1870, p. 200) that in Uman a pair may be found inhabiting almost every large reedy pond. He found a nest there in 1867 in the middle of a willow bush. Dr. Radde speaks of it as being tolerably common in Southern Bessarabia and in the steppes of Tauria; and Dr. Eversmann writes (J. f. O. 1853, p. 64), this Harrier "is as common in the fields and steppes as *Milvus migrans*. It is interesting to see how at the approach of winter it is driven by the snow slowly southward. I have witnessed this several times in the latter part of the autumn when on the way from the mountains of the Ural, where winter begins early, to the warmer steppes of Orenburg. As far as there was snow covering the ground no *Circus cyaneus* could be seen; but where the steppe was still bare, I saw numbers of them, which shows that they left to avoid the snow." It is met with in winter in Asia Minor; and Canon Tristram says (Ibis, 1865, p. 260) that it is common and permanently resident on the plains of Palestine.

It does not appear to be numerous in North-east Africa, and is only found there in the cold season. Von Heuglin says that he met with it occasionally in the winter in that country, and adds that it goes south to Abyssinia and Kordofan. In North-west Africa the Hen-Harrier is less common than either of the other two species, and appears to be only a winter visitant; for Loche must certainly be mistaken in his statement that it breeds commonly in Algeria. Mr. J. H. Gurney, jun., met with it there, and writes (Ibis, 1871, p. 72):—"I observed a fine pair of the Hen-Harrier, which is not included in Dr. Tristram's Sahara list (Ibis, i. p. 277), hunting some rushes and an Arab's garden at Laghouat. They were remarkably tame for Hawks; I shot the female, and crept up to within 40 yards of the male as he was preying upon a bird; but having only No. 11 shot in my gun he escaped. Egypt was the only locality in Africa from which my father had previously seen the Hen-Harrier." Favier speaks of it as being but seldom met with in Tangier; and it does not range down into Central or South Africa.

In Asia it is met with right across the continent to Japan. It has been obtained at Erzeroom; and Mr. Hume says (Rough Notes, p. 296) that in India this Harrier "is pretty common, in the cold weather, at any rate, about the outer ranges of the Himalayas from Abottabad to Kumaon, and possibly further east; and stragglers have been obtained in Baraitch (Oudh), Meerut, Bareilly, Gourgaon, Etawah, Saugor, Nagpoor, Chandah, and Goona; but except in the Himalayas, or within twenty miles or so of their feet, its occurrence appears to be somewhat exceptional." He further adds that he was assured that a female of this Harrier or the Pallid Harrier was seen sitting on its eggs in a marshy plain at the end of Lake Tsoomourari, in Thibet. In Siberia it is widely distributed. Dr. von Middendorff states that he obtained one on the 22nd April (O. S.) on the Amgä river; Maack shot an old male near Nertschinsk, on the head-waters of the Amoor, on the 19th April; and Dr. G. Radde, who found it breeding on the Tarei-nor, says that he observed it in the plains of the eastern Sajan to an altitude of about 3000 feet. He seldom met with it on Lake Baikal, but found it common on the elevated steppes of Transbaikalia and on the Central and Upper Amoor. On the 16th September the Harriers became rare on the Tarei-nor; and none were seen after the 26th of that month. The main body

passed late in August; and late in March they appeared again on the Tarei-nor, and were chiefly seen at the old breeding-places on the Uldsa river. Colonel Przevalsky says that it winters in the Tsaidam and Zahar country, in Mongolia, and has been found at Dalai-nor in small numbers in the spring; but he did not observe it in the Hoang-ho valley. He took a nest at Alashan, but only once noticed it in Kansu on the autumnal passage, and did not meet with it in Gobi. It is scarce in the Ussuri country, arriving at Lake Hanka about the end of May. Père David says that it is generally distributed throughout China, and not uncommon near Pekin; and Mr. Swinhoe frequently met with it in different parts of that country.

Schlegel refers the Japanese bird to *Circus hudsonius*; but there is a specimen of the Hen-Harrier in the Norwich Museum from Japan, obtained through Mr. Whitely.

In habits the Hen-Harrier differs a good deal from the true Hawks; and it approaches somewhat in them, as in its general appearance, to the Owls. It inhabits open treeless plains and heaths, shunning the forests and groves, and may usually be seen carefully quartering the ground in search of prey. On the wing it is very graceful, flying easily with partly spread tail and extended wings, every now and again propelling itself with a gentle flap, never rising very high above the ground, and often gliding along within five or six feet of it. When it perceives any thing in the way of food it hovers for a second or two, and then, with apparently a little hesitation, pounces down and secures its prey. It feeds on small birds, mice, insects, lizards, frogs, &c., and will not unfrequently attack young hares and rabbits, and is therefore no great friend of the game-preserver and his keepers. On the whole, however, it does not often assail any but feeble and young game-birds, and appears to trust more to obtaining small birds—such as Larks, Snipe, and some of the lesser land birds and waders, by pouncing on them whilst on the ground. During the breeding-season it is said to feed largely on eggs and the young of such small birds as nest on the ground, and destroys thus many broods. It also pays visits to the poultry-yard, and in some parts is tolerably destructive to the poultry. Macgillivray says that it "feeds on small birds and the young of larger, on young hares and rabbits, on mice, frogs, lizards, and serpents. For the most part it pounces upon its victims as they repose on the ground; but it also pursues birds in open flight, and, so far from confining itself to feeble game, as some allege, it has been known to seize the Red Grouse, Ptarmigan, and Partridge. Thus, my son, while searching for insects on the Pentland Hills in the summer of 1835, saw a pair when flying low over the heath start a Red Grouse, which one of them captured after a short chase; and in September of the same year Mr. Martin, gamekeeper to the Earl of Lauderdale, shot a male as it was carrying off a bird of the same species. In the crop of one examined by me I found the remains of a Grey Ptarmigan; and several writers allege that it pursues not only Partridges but Teal. Mr. Slaney, for example, states that they are very destructive to game. In shooting, the writer has seen the Hen-Harrier dart at a Partridge which his dogs put up, and carry it off. By following the marauder some distance he got the Partridge, which was quite dead, with a very slight mark on the head. Another day he shot the Ring-tail, and, on examining the spot where the Hawk got up, found a Partridge half devoured. This had been killed, as appeared by the feathers, at a little distance, but carried to the edge of a plash of water, where the plunderer had an opportunity of washing his beak and claws between every mouthful." Mr. J. A. Harvie-Brown, who has frequently found the present

species breeding in Sutherland, gives the following information respecting its habits as observed by him there:—"Common in some parts of Sutherland, perhaps most so in the north-east. This species, like other raptorial birds, frequently returns to the same hillside, year after year, during the nesting-season, generally breeding amongst tall old heather, but occasionally resorting to very bare open spots on the moors. Old white males are most unfrequently seen, being naturally not so common as the younger examples. The female is easily obtained during the breeding-season, either as she rises off the nest or when, having risen, she repeatedly returns and passes overhead, uttering her tremulous Kestrel-like cry. The male, however, is a very shy bird, generally keeping at a distance from the nest, perched upon some grey stone or tussock of heather. He is seldom, indeed, observed near the nest at all, although upon occasions I have witnessed both male and female wheeling about in close proximity to it. The cry of the male upon such occasions seemed more prolonged than that of the female.

"When the Hen-Harrier hunts for prey, it skims over the surface of the moors, backwards and forwards, taking in every square yard of ground; and when it discovers a Grouse on its nest, or a mouse in the grass, it pounces suddenly down, without seeming to make any preparatory halt in its flight. It wheels rapidly to the right or left, and with the same beat of the wings dashes down upon the victim. It seldom ascends the hillsides above the line of heather; nevertheless I have found amongst the remains of a Hen-Harrier's repast, on the top of a mound of stones and moss on the moor, the feathered legs and feet of a newly killed Ptarmigan."

The nest of the Hen-Harrier is placed on the ground, and consists merely of a few sticks or heather-bents with a little dry grass, unless placed in a damp spot, when a foundation is laid to keep the eggs above the wet. The eggs, generally four, or sometimes five in number, are bluish white, usually unspotted; but occasionally eggs are found with a few reddish blotches scattered over the surface. One in my collection, from the Volga, is very richly marked with red, almost as much as in ordinary pale varieties of the Buzzard. In size eggs in my collection vary from $1\frac{32}{40}$ by $1\frac{16}{40}$ to $1\frac{34}{40}$ by $1\frac{17}{40}$ inch. Mr. J. A. Harvie-Brown says that in Sutherland "the nest of the Hen-Harrier is occasionally placed on a very bare hillside, almost destitute of heather. When so placed, as in the case of the one I found in 1869, there is scarcely any foundation laid at all, and it merely consists of a few loosely arranged heather-stems with a shallow depression in the centre, lined with wiry dry grass cut into small pieces about an inch or less in length. When placed in deep heather, however, it presents a totally different appearance, being sometimes more than a foot in outside depth, and composed of stout rank stems and roots of heather. Its height is generally such as to bring the bird's head, when sitting, slightly above the level of the surrounding heather."

In the Nearctic Region this Harrier is replaced by a closely allied but perfectly distinct species, *Circus hudsonius* (Linn.) (Syst. Nat. i. p. 128, 1766). The female of *Circus hudsonius* closely resembles that of *Circus cyaneus* in coloration of plumage, but has a longer tarsus; the male, however, differs from the male of the Hen-Harrier in having the upper parts much darker and more of a brownish ash-grey, the grey on the breast extends further down, and the underparts of the body, especially the flanks, and the under wing-coverts are barred with pale rufous or dull light. Two adult males shot by myself in New Brunswick and Texas have the tarsus 3·2 inches in length.

The specimens figured are an adult male and female, the latter being in the background.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Casa Vieja, Spain, October 28th, 1871 (*L. H. Irby*). *b*. Leadenhall Market. *c*, ♀. Butrinto, Albania, October 28th (*H. Barclay*). *d*, ♂. Curjo, Archangel, May 20th, 1873 (*Piottuch*). *e*. Lower Volga, July 1877 (*Schlüter*). *f*, *g*, ♂ *juv.*, ♀ *juv.* Metlino, S.E. Ural, August 2nd and July 29th, 1872 (*Meves*). *h*, ♀. Ural, July 2nd, 1868 (*Sabanäeff*).

E Mus. Norv.

a, *juv.* Northrepps, Norfolk, 1858. *b*, *c*, *d*, *e*, *f*, ♂. Cambridgeshire. *g*, ♂ *juv.* Voelas, N. Wales (*J. P. Wilmot*). *h*, ♂, *i*, ♀. Orkney Isles (*S. G. Buxton*). *k*, ♂ *juv.* Persia (*Stevens*). *l*, *juv.* Tangier (*Favier*). *m*, ♀ *ad.* Nepal. *n*, ♂ *ad.* Himalayas (*Warwick*). *o*. Oudh (*Colonel Irby*). *p*, ♂ *ad.* Shanghai. *q*, *r*, ♀. Amoy, China (*R. Swinhoe*). *s*, ♀. Japan (*Whitely*).

E Mus. C. A. Wright.

a, ♂, *b*, ♀. Malta, December 1871 (*C. A. W.*).



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J.Wolf del. E.Neale lith.

Hanhart imp.

PALLID HARRIER.
CIRCUS SWAINSONI.

CIRCUS SWAINSONI.

(PALLID HARRIER.)

Circus swainsonii, Smith, S. Afr. Quart. Journ. i. p. 384 (1830).
Circus superaliaris, Smith, tom. cit. p. 385 (1830).
Circus cyaneus, Frankl. Proc. Zool. Soc. 1830, p. 115 (nec Linn.).
Circus albescens, Less. Traité d'Orn. p. 85 (1831).
Falco æquipar, Cuv., fide Less. Traité d'Orn. p. 85 (1831).
Circus pallidus, Sykes, Proc. Zool. Soc. 1832, p. 80.
Falco herbœcola, Tickell, Journ. As. Soc. Beng. ii. p. 570 (1833).
Circus dalmatinus, Rüpp. Mus. Senck. ii. p. 177, pl. xi (1837).
Strigiceps pallidus (Sykes), Bp. Comp. List, p. 5 (1838).
Circus (*Pterocircus*) *pallidus* (Sykes), Kaup in Wiegm. Arch. xvi. p. 32 (1850).
Circus æquipar (Cuv.), Puch. Rev. Zool. 1850, p. 14.
Circus (*Glaucopteryx*) *pallidus* (Sykes), Kaup, Contr. Orn. 1850, p. 58.
Strigiceps swainsoni (Smith), Bp. Rev. Crit. p. 133 (1850).
Circus desertorum, C. L. Brehm, Vogelfang, p. 33 (1855).
Strigiceps desertorum, L. Brehm, Naumannia, 1855, p. 269.
Glaucopteryx pallidus (Sykes), Gray, Hand-l. of B. i. p. 37. no. 370 (1869).
Circus macrurus, Sharpe, Cat. Accip. p. 67 (1874, nec Gm.).

Busard pâle, French; *Albanella siciliana*, Italian; *Bü-ghadam-abiad*, male, *Bü-ghadam*, female, Maltese; *Steppen-Weihe*, German; *Blek Kärrhök*, Swedish.

Figuræ notabiles.

Fritsch, Vög. Eur. taf. 9. fig. 8, taf. 10. fig. 2; Naumann, Vög. Deutschl. taf. 348; Sundevall, Svensk. Fogl. pl. 62. fig. 4; Gould, B. of Eur. pl. 34; Susemihl, Vög. Eur. taf. 30; Smith, Ill. S.-Afr. Zool. pls. 43, 44.

♂ *ad.* capite et corpore suprà canis, pileo pallidiore, supracaudalibus albis cinereo-cano fasciatis: rectricibus centralibus dorso concoloribus, reliquis albis saturatè cinereo fasciatis: primario externo saturatè cinereo, reliquis ad basin pallidis, versus apicem nigricantibus, secundariis et tectricibus alarum dorso concoloribus: mento, capitis lateribus et gulâ albis vix cinereo tinctis: corpore subtùs albo, hypochondriis indistinctè striatis: subalaribus et remigibus subtùs ad basin albis, his ad apicem nigris: rostro nigricante: cerâ, iride et pedibus pallidè flavis.

♀ *ad.* fem. *Circi cineracei* similis, sed pallidior et minus rufescens: corpore subtùs cervino-albo, fusco-striato.

Adult Male (Guzdad, 15th January). Upper parts blue-grey or dark French grey, the head paler; upper tail-coverts white, barred with dark blue-grey; central rectrices blue-grey, the remainder white, barred with dark blue-grey; first primary dark ashy blue, the remainder light at the base, becoming blackish

towards the tip; secondaries and wing-coverts ashy blue-grey; chin, sides of the head, and throat white, with a blue-grey tinge; rest of the underparts white, the flanks with a few indistinct striations; under wing-coverts and basal portion of the wings underneath pure white, the terminal portion being blackish; bill blackish; cere, iris, and legs pale yellow. Total length about 17·0 inches, culmen 1·15, wing 13·8, tail 9·2, tarsus 2·9.

Adult Female (Guzdad, 15th January). In general appearance resembling the female of *Circus cineraceus*, but much paler and less rufous; the ground-colour of the underparts and the markings on the upper parts being warm buffy white.

Young (India). Resembles the young of *Circus cineraceus*, but is generally paler, especially on the upper parts, and may also be easily distinguished by the difference in the emargination of the primaries.

Obs. In the adult plumage the male bird of this species is very distinct from *Circus cineraceus*, and much more closely resembles *Circus cyaneus*, from which it may readily be distinguished by having the upper tail-coverts barred and not plain white. In the plumage of the female and of the young, however, it is not so easy to separate them; but an examination of the quills will at once show which the species is, as in *Circus cyaneus* the outer web of the fifth primary is notched, whereas in *Circus swainsoni* and *Circus cineraceus* it is plain; and these two latter may be separated by an examination of the second primary, which in *Circus cineraceus* has the notch fully an inch beyond the coverts, whereas in *Circus swainsoni* this notch is nearly, or entirely, hidden by the coverts.

In Southern Europe this species is tolerably common, while in Central and Northern Europe it is but a rare visitant. In Africa it is to be met with down to the Cape of Good Hope, and in Asia as far east as China.

It has not been met with in Great Britain, and is an extremely rare visitant to Scandinavia. It has not been recorded from Norway; Professor Nilsson says that it has been met with on three occasions in Sweden—once on Gottland (on the 9th May 1834), once at Lund (in the same year), and once near Gothenburg (on the 3rd June 1853); and, according to Von Wright, two examples have been shot in Finland, both near Helsingfors—one on the 5th May 1842, and one on the 8th May 1858, both being old males.

It is common in many parts of Russia, especially on the Lower Volga; and Mr. Sabanäeff informs me that he saw it in the Ural, on the boundary between the Shadrinsk and Ekaterinburg districts. Mr. Taczanowski writes that it is not rare in the Ukraine, but he does not know that it has ever been met with in the kingdom of Poland.

In North Germany, according to Borggreve, it occurs here and there as a rare straggler; but Von Homeyer states (J. f. O. 1872, p. 334) that young birds are abundant in Pomerania on passage. Pastor Boeck writes (J. f. O. 1859, p. 239) that on the 2nd April 1859 he purchased in the Dantzic market an old male of this species, which had been shot at Zoppot, a bathing-place about two German miles from that town; and another adult male was shot (J. f. O. 1862, p. 65) in Mecklenburg, at Hohen Sprenz, by Mr. Berens on the 7th September 1862. It has also been met with in Denmark; for, according to Mr. Collin, Mr. Skeel shot a young male of this species at Dronninglund, in Vendsyssel, on the 16th August 1858; and another young example is said to have been caught in Zeeland in 1862. There are three examples in immature dress in the collection of Mr. Gätke, obtained by himself in Heligoland; but it is not included by Professor

Schlegel as occurring in Holland; and it is doubtful if it has ever occurred in Belgium. According to Baron De Selys Longchamps it has been obtained near Mayence; and Mr. E. Schütt, who obtained it in Baden, writes (J. f. O. 1861, p. 235) as follows:—"I shot an immature bird of this species about the end of August 1852, near Durmersheim, on the Lower Rhine, in the stomach of which I found nothing but lizards. As it is not likely that the Pale Harrier begins its migration at this time of the year, probably this specimen has been hatched here. According to Herr von Kettner, specimens have been on several occasions shot near Carlsruhe and Rastadt."

In France it is, as elsewhere in the north of Europe, but a rare straggler. Degland states that Crespon possessed an immature specimen obtained near Nîmes in March 1835. M. Balthasar, of Douai, has in his collection an adult male shot at Raimbaucourt, not far from that town; and there are two examples in the collection of Baillon obtained near Abbeville. Lacroix says that it is very rare in the French Pyrenees. He obtained two young examples near Perpignan; and it is said to have nested near Pézenas, in Hérault, in May 1869. Professor Barboza du Bocage says that it may possibly occur in Portugal. Lord Lilford writes to me that he "has a specimen from Andalucia, where it is not common;" and, according to Colonel Irby (Orn. Str. Gibr. p. 33), it is not uncommon in spring near Seville. According to Salvadori it appears to be of common occurrence in Liguria, but rare elsewhere on the mainland, whereas in Sicily it is abundant. Lord Lilford informs me that it is common on passage in Malta, where he observed several in March 1875, and procured specimens in the market; and Mr. C. A. Wright writes (Ibis, 1864, p. 46) as follows:—"This is perhaps the commonest of the Maltese Harriers, and arrives at the same seasons as the others. It is most abundant in April, when it is a conspicuous feature on a spring morning, gliding noiselessly over the open country in quest of insects, lizards, and small birds, the remains of which I have frequently found in its maw. In a large series which I have collected of these birds the grey bars over the rump are very distinctly marked in the adult males, some of which have the chest and all the underpart of the body of a pure white; others have the chest pale grey; while others, again, probably immature males, have the chest marked with more or less fine brown striæ."

It appears to be uncommon in Southern Germany; for Dr. Anton Fritsch writes (J. f. O. 1871, p. 182) that as yet it has only been twice observed in Bohemia—one, an adult male, having been obtained by Mr. Lokaj; and the second example is in the collection of Mr. Hromádko, near Pardubic. Messrs. Danford and Harvie-Brown say (Ibis, 1875, p. 296) that it is rare in Transylvania; according to Bieltz it has been obtained near Hermanstadt; and Herr Buda Adám says that it has occurred at Hátzeg. It is, however, common on the Southern Danube, and, Messrs. Elwes and Buckley write (Ibis, 1870, p. 76), "most numerous in the Dobrudscha, where it is so common that a basketful of eggs may be gathered in a day in some of its breeding-places. On the wing it is almost impossible to distinguish this species from the preceding one [*C. cyaneus*]; and the females are almost exactly similar." Mr. Robson informs me that large numbers pass the Bosphorus during migration, and that it is much more numerous throughout European Turkey than *Circus cyaneus*. Dr. Krüper says that it occurs in Greece in winter, and examples have been obtained there in January, March, April, and September. Lord Lilford informs me that he met with it at Suda Bay, in Crete, and in Cyprus; but Mr. Danford did not observe it

in Asia Minor, and it does not appear to be common there; but, referring to its occurrence in Palestine, Canon Tristram writes (Ibis, 1865, p. 260) as follows:—"I think this bird is more common than either of the preceding species [*C. æruginosus*, *C. cyaneus*, and *C. cineraceus*], as several specimens were shot by different members of our society at different seasons. It is always to be found about the swamps of Esdraelon, and especially by the lagoons at the mouth of the Kishon."

In North-east Africa it is common and resident. Captain Shelley says (B. of Egypt, p. 183) that it is "resident in Egypt and Nubia throughout the year, where it may often be seen in small parties frequenting the rows of sont trees, which are not uncommon in the neighbourhood of villages, and sometimes in company with *Circus cyaneus*;" and Von Heuglin writes that it is much more numerous in the autumn and spring than either the Hen-Harrier or Montagu's Harrier, and is met with southwards to Sennaar, Habesch, and Kordofan. In North-west Africa it does not appear to be so numerous as on the east side: Loche states that is tolerably common in Algeria; and according to Favier it occurs on passage near Tangier. It has been obtained in Senegal and Casamanze; Pel obtained it between Cape Tres Puntas and Accra, on the Gold Coast; and Andersson writes (B. of Damara Land, p. 32):—"This bird is migratory, appearing towards the return of the rainy season in Damara and Great Namaqua Land; I have observed very few adult specimens; but young and middle-aged birds are pretty numerous. This Harrier haunts chiefly the sides of marshes, the banks of rivers, and other humid places, in search of lizards, mice, moths, white ants, &c.; it usually flies low and straight, and only occasionally in circles." To this Mr. Gurney adds the following note:—"This Harrier also occurs in Ovampo Land, a specimen obtained in Ondonga on January 22nd, 1867, having been contained in Mr. Andersson's last collection. In addition to this species, Mr. Andersson states that *Circus cyaneus* 'occurs very sparingly in Damara Land;' but I suspect that in this remark there has been an error of identification, and that the specimens thus referred to in reality belonged either to the present or to the succeeding species, as I have never seen an example of *Circus cyaneus* from any locality south of the equator." According to Mr. Layard (B. of S. Afr. p. 34) this Harrier "has a wide range in South Africa. Smith says that he has seen a few specimens near Cape-town, Natal, the mouth of the Orange River, and the Tropic of Capricorn. Mr. Jackson sends it from Nel's Poort; and I have shot it near the Observatory, Cape-town, in company with *Circus ranivorus*." Captain Shelley also mentions (Ibis, 1875, p. 65) that he shot an immature example near Ceres, in the Cape colony.

In Asia the present species occurs at least as far east as China. According to Dr. Severtzoff it breeds in Turkestan, and it is said to be common in Southern Persia. Dr. Jerdon writes (B. of India, i. p. 96), it is "exceedingly abundant throughout all India, coming in at the beginning of the cold season, September to October, and disappearing in March or April for the purpose of breeding. Burgess speaks of his having heard that they sometimes breed in this country, and got some eggs which were said to be those of this species; but I have no doubt that he was misled, and that the eggs were probably those of *Elanus melanopterus*." To this Mr. A. O. Hume adds (Rough Notes, p. 300) as follows, viz.:—"In the plains of India this bird certainly does not breed. We first see them in Upper India early in October (I have twice seen specimens in the last week in September); and the great majority leave by the close of March, or early in

April, according as the season is an early or a late one. In the Terai and Dhoon they may linger somewhat longer, as I have a specimen from the latter killed on the 20th of April. Whether they breed in the Himalayas, on this side of the Snowy Range, I cannot say; I have never met with a single one during my summer rambles in the hills, and very much doubt their breeding south of the snows." It has been met with in Ceylon; and Mr. Holdsworth says that it is common in the Aripo district throughout the year, and he has frequently seen it at Nuwara Eliya in July and August. It is not recorded from Mongolia by Colonel Prjevalsky, but is found, though rarely, in China. Père David says that he obtained it once near Pekin; and according to Swinhoe (Ibis, 1874, p. 268) Captain Blakiston procured it on the Yangtsze river.

In habits and mode of nidification the present species differs but little from the Hen-Harrier. Lord Lilford says that it is perhaps less addicted to marshes than that species, and he usually saw it hunting over corn-fields; and Dr. Jerdon, writing on its habits, says (*l. c.*):—"It frequents open, stony plains, and cultivated ground, occasionally flying through a cantonment. It hunts the plains, regularly beating and squaring its ground, and occasionally hunting along hedgerows, or the edge of some thick bush. It feeds chiefly on reptiles and insects, also occasionally on small mice and shrews, and weak, or sickly, or wounded birds, especially Quails. I have only once seen it perched on a tree. In general it perches on a stone, or a mound of earth, or an ant-hill, or even on the ground. Its powerful sense of hearing must be of great use to it when seated on the ground at night, to give it warning of the approach of any animal: but yet occasionally it is surprised at night by a jackal, fox, or mongoose; for I have not unfrequently found its feathers on the bund of a field. The flight of the Harrier is usually slow, a few beats alternating with a sailing motion; but it is capable of, and now and then takes, sudden flights of considerable energy after a bird which it thinks it can capture. The sudden way in which it can stop its flight, and drop down on the ground on some quarry, must have been witnessed by many. Its stealthy, noiseless mode of flight, and the sudden pouncing on its prey, have gained for it the appropriate Telugu and Tamul name of Cat Kite."

Like that of the other species of Harrier, the nest of the Pallid Harrier is placed on the ground, and resembles that of *Circus cineraceus*, being a mere depression in the soil lined with grass-bents or leaves; and the eggs, four or five in number, are bluish white in colour, resembling those of *Circus cineraceus*. Those in my collection, from the Lower Volga and Bulgaria, measure from $1\frac{25}{40}$ by $1\frac{12}{40}$ to $1\frac{29}{40}$ by $1\frac{14}{40}$ inch, and one or two are richly, though somewhat sparingly, spotted with deep red; but this variety appears to be but rare.

Mr. Sharpe (*l. c.*) has deemed it advisable to discard the name by which the present species has so long been known, and has called it *Circus macrurus* (Gm.), this name being based on *Falco macrurus*, S. G. Gmelin (Reise durch Russland, i. p. 48, 1770); but I cannot at all agree with him in this view; for, after carefully comparing the description given by Gmelin with specimens of *Circus cyaneus* and *Circus swainsoni*, I find that it may equally well be applied to either, and is certainly not sufficiently clear to enable one to identify it as agreeing with the Pallid Harrier. Under these circumstances it appears to me to be most unnecessary to discard an old and well-known name in favour of one of very doubtful value, and I prefer to retain Smith's name of *swainsoni* for the present species.

The specimens figured are the adult male and female above described, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀. Seville, Spain, April 2nd, 1872 (*Col. Irby*). *b, c.* Malta (*Whitely*). *d*, ♂. Sarepta, Volga (*Dr. Stader*). *e*, ♀. Siout, Egypt, March 16th, 1863 (*Cochrane*). *f*, ♂, *g*, ♀. Guzdad, Kotekhaie, India, January 15th, 1871. *h*, ♀, *i, k, juv.* Kotekhaie, February 1871 (*Dr. Henderson*). *l.* Sirsa, November 29th. *m.* Sirsa, December 29th, 1869 (*Dr. Henderson*).

E Mus. Norv.

a, ♂ *ad.* Nice (*J. H. Gurney, jun.*). *b*, ♂ *ad.* Sicily (*Parzudaki*). *c*, ♂ *juv.* Smyrna (*Stevens*). *d*, ♀ *juv.* Red Sea (*S. G. Buxton*). *e*, ♀ *ad.* Erzeroum. *f, g, h, i*, ♂, *k*, ♀. Bissao (*Verreaux*). *l*, ♂ *ad.*, *m*, ♂ *juv.* Tangier (*Favier*). *n*, ♂ *ad.* Damara Land (*Andersson*). *o*, ♂, *p*, ♀. Potchefstroom, Transvaal (*Ayres*). *q*, ♀ *ad.* Nubia. *r*, ♀. Egypt (*E. C. Taylor*). *s*, ♂ *ad.*, *t*, *juv.* Oudh (*Col. Irby*). *u*, ♂. Himalaya (*Warwick*). *v, x*, ♂. India. *y.* Ceylon (*S. Bligh*).

Genus BUTEO.

Accipiter apud Brisson, Orn. i. p. 406 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 127 (1766).
Buteo, Lacépède, Mém. de l'Inst. iii. p. 506 (1800).
Butaquila apud Hodgson in Gray's Zool. Misc. p. 81 (1844).
Butaëtos apud Möschler, Naumannia, 1853, p. 296.
Butaëtus apud Thienemann, J. für Orn. 1853, Extrah. p. 105.
Circaëtus apud Strickland, Orn. Syn. p. 46 (1855).
Limnosalus apud Herzog Paul Wilhelm von Württemberg, Naumannia, 1857, p. 432.

The species belonging to the genus *Buteo*, numbering, according to Mr. Sharpe, eighteen, exclusive of *Buteo montanus* (which he treats as a subspecies), are found in the Palæarctic, Ethiopian, and Oriental (excepting the Indo-Malayan subregion), the Nearctic, and Neotropical Regions; but the genus is unrepresented in the Australian Region. Three species only are found in the Western Palæarctic Region. The Buzzards are, as a rule, sluggish, heavy birds; and, unlike the Falcons, they seldom pursue birds on the wing, but subsist chiefly on such as they can more easily capture, and on small mammals, reptiles, insects, &c. They frequent both wooded and open country, and may frequently be seen seated on some open perch in search of prey, or else circling at some altitude above the grove where the nest is placed. Their cry is a loud, clear, mewing call, which may be heard at a considerable distance. They breed early in the season, and place the nest, which is constructed of sticks and lined with grass or any other soft material, either on a large tree or on a rock. Occasionally, however, they will repair a deserted nest of some other species. Their eggs are white with a pale bluish tinge, and are more or less spotted and blotched with pale violet-grey and deep reddish brown or rufous.

Buteo vulgaris, the type of the genus, has the beak somewhat slight, decurved from the base, the anterior part of the edge of the upper mandible slightly projecting; nostrils oval, placed in the anterior portion of the cere, which is large; wings long and wide, the first quill rather shorter than the seventh, the third and fourth nearly equal, the latter being longest, the first four quills deeply notched on the inner web; tail moderately long, slightly rounded; tarsus rather short, strong, bare (except on the upper part), scutellate; toes short; claws strong, acute, curved.



J.G.Keulemans del.

Mintern Bros. imp

COMMON BUZZARD.
BUTEO VULGARIS.

BUTEO VULGARIS.

(COMMON BUZZARD.)

The Puttock or *Buzzard*, Albin, N. Hist. Birds, i. p. 1, pl. 1 (1738).
Accipiter buteo, Briss. Orn. i. p. 406 (1760).
Falco buteo, Linn. Syst. Nat. i. p. 127 (1766).
?*Spotted Falcon*, Penn. Brit. Zool. iii. p. 8, pl. iii. (1770).
?*Aquila glaucopis*, Merrem, Beitr. ii. p. 25, taf. 7 (1786).
?*Falco glaucopis* (Merr.), Gm. Syst. Nat. i. p. 255 (1788, ex Merr.).
?*Falco versicolor*, Gm. Syst. Nat. i. p. 272 (1788, ex Penn.).
?*Falco albus*, Daudin, Traité d'Orn. ii. p. 155 (1800).
Accipiter buteo (L.), Pall. Zoogr. Rosso-As. i. p. 362 (1811).
Buteo vulgaris, Leach, Syst. Cat. Mam. & B. Brit. Mus. p. 10 (1816).
Der braunfahle Geier, Frisch, Vög. Teutschl. pl. 76 (1816).
Buteo mutans, Vieill. Nouv. Dict. iv. p. 469 (1816, ex Frisch).
Buteo fasciatus, Vieill. tom. cit. p. 474 (1816).
Falco mutans (Vieill.), Savi, Orn. Tosc. iii. p. 193 (1831).
Falco fasciatus (Vieill.), Savi, tom. cit. p. 195 (1831).
Falco poiana, Savi, tom. cit. p. 197 (1831).
Buteo communis, Lesson, Traité d'Orn. p. 78 (1831).
Buteo septentrionalis, C. L. Brehm, Vög. Deutschl. p. 42 (1831).
Buteo medius, C. L. Brehm, tom. cit. p. 43 (1831).
Buteo murum, C. L. Brehm, tom. cit. p. 44 (1831).
Buteo fuscus, Macgill. Hist. Brit. Birds, iii. p. 183 (1840).
Falco variegatus, De Selys, Faune Belge, p. 54 (1842, nec Gm.).
Falco albidus, De Selys, op. cit. p. 55 (1842, nec Gm.).
Buteo cinereus, Bp. Consp. Gen. Av. i. p. 18 (1850).
Buteo variabilis, Bailly, Orn. Sav. i. p. 127 (1853).
Buteo major, L. Brehm, Naumannia, 1855, p. 268.
Buteo minor, L. Brehm, ut suprà.
Buteo albidus, L. Brehm, ut suprà (nec Gm.).
Buteo vulgaris, var. *obscura*, Pelz. Ver. z.-b. Gesellsch. Wien, 1862, p. 144.
Buteo vulgaris, var. *etrusca*, Pelz. ut suprà.
Buteo minor, Pelz. ut suprà (nec Heugl.).

An-Clamhan, Gaelic; *Buse*, French; *Tartaranhão*, Portuguese; *Milano rojo* (fide *Brehm*), Spanish; *Pojana*, Italian; *Buizerd*, Dutch; *Mäuse-Bussard*, *Mäuseaar*, German; *Muusevaage*, *Mus-Vaage*, Danish; *Musvaag*, Norwegian; *Ormvråk*, Swedish; *Käärmehaukka*, Finnish; *Dekey-Iastreb*, Russian.

2

Figuræ notabiles.

Albin, *l. c.*; Werner, Atlas, *Rapaces*, pl. 28; Kjærb. Orn. Dan. taf. iv.; Frisch, *l. c.*; Fritsch, Vög. Eur. taf. 5. fig. 8; Naumann, Vög. Deutschl. taf. 32, 33; Sundevall, Sv. Fogl. pl. 28. fig. 4; Gould, B. of Eur. pl. 14; id. B. of G. B. i. pl. vi.; Schlegel, Vög. Nederl. pl. 35; Roux, Orn. Prov. pls. 20, 21, 22.

♂ *ad.* corpore et capite suprà saturatè fuscis, dorso vix metallico nitente: fronte et nuchâ albido notatis, et corpore suprà, dorso excepto, vix rufescente brunneo notato: remigibus nigro-fuscis, primariis in pogonio externo inconspicuè griseo lavatis, remigibus omnibus in pogonii interni dimidio basali albidis nigro-fusco fasciatis et vix eodem colore marmoratis: uropygio cum supracaudalibus saturatè fuscis vix purpureo nitentibus, his ex parte fulvido apicatis: caudâ fuscâ vix pallidè brunneo apicatâ et grisescente brunneo fasciatâ: capitis lateribus et gulâ albidis nigro-fusco striatis: corpore subtùs saturatè fusco, profusè ochrascente albido et albo notato et fasciato: subcaudalibus ochrascenti-albidis, conspicuè fusco transfasciatis: cerâ et pedibus flavicantibus, unguibus et rostro nigricanti-corneis, hôc ad basin pallidiore: iride fuscâ.

♀ mari similis sed major.

Adult Male (Skanör, Sweden). Upper parts dark earth-brown, the back having a faint metallic gloss; forehead and nape marked with whitish, and the upper parts generally, except the interscapulary region, slightly varied with dull reddish brown; quills blackish brown, the primaries with a very faint greyish tinge on the outer web, and all with the basal half, or rather more, of the inner web white broadly barred and slightly marbled with dark brown; rump and upper tail-coverts dark earth-brown, with a faint purplish gloss, some of the latter with fulvous tips; tail dark brown, crossed by about ten lighter, greyish brown bands, and slightly tipped with dull light brown; throat and sides of the head whitish, closely striped with dark brown, rest of the underparts dark brown, profusely marked and barred with yellowish white and almost pure white; under tail-coverts yellowish white, with broad bars of dark brown; cere and legs dark yellow; claws dark horn; beak blackish horn, lighter at the base; iris brown. Total length about 20 inches, culmen 1·3, wing 14·8, tail 8·8, tarsus 3·1.

Female (Wermland). Resembles the male, but has the upper parts more marked with light brown and whitish, and the underparts much more varied with white. In size, also, larger than the male, measuring—culmen 1·4, wing 15·6, tail 9·4, tarsus 3·12.

Nestling (Belgium). Covered with thick soft white down, which on the upper parts is greyish white; the feathers, which are just sprouting on the wings and the back of the neck, are dark brown, tipped with reddish brown.

Obs. The present species varies so widely in plumage that it is quite impossible to describe the different varieties. These are certainly not dependent on either age or sex; but individual specimens may be found of either sex, or almost any age, varying from almost white with but few brownish markings, to deep blackish brown but little marked with white or pale brown. Some of the varieties are exceedingly beautiful, one of the handsomest I have ever seen being one in the collection of Mr. E. Hargitt. Though I have several of what I consider the typical or dark brown form, I possess only one of the whitish variety, in which the upper parts are dull brown, margined with white, and the underparts white, slightly marked on the throat, breast, and flanks with pale reddish brown. Mr. Benzon informs me that he has obtained all varieties in Denmark, from blackish brown and dark brown to brownish yellow,

cream-yellow, and almost yellowish white, some almost uniform in colour, whereas others are varied, the latter being most numerous; indeed he says that it is very rare that one is obtained without some dark markings in the plumage.

Obs. There is some little difficulty respecting the synonymy of the present species, which has been described under so many names. So far as I can understand, *Aquila glaucopis* of Merrem, *The Spotted Falcon* of Pennant, and *Falco albus* of Daudin all refer to varieties of the common Buzzard; but all these are open to grave doubt, and I have therefore deemed it best not to allow a doubtful name to take precedence of an undoubted one, and have preferred to retain Leach's appellation of *Buteo vulgaris*, by which our common Buzzard has so long been known, rather than adopt either of Gmelin's very uncertain specific names of *glaucopis* or *versicolor*, or Daudin's *albus*.

So far as I can ascertain, the range of our common European Buzzard is more limited than that which has generally been assigned to it: it inhabits Europe generally, not ranging far into Asia, except that it is stated to occur in Turkestan; and it appears to be but a rare winter visitant in Africa.

In Great Britain it is now a rare bird; but it still breeds not only in one or two localities in the north of England, but also more commonly in Scotland, in places where it is not subjected to great persecution. I possess eggs taken in Cumberland, but for obvious reasons refrain from giving the exact locality; and Mr. A. G. More, writing on the distribution of birds in Great Britain during the breeding-season, says (Ibis, 1865, p. 12) that it "is by no means common, and is nearly exterminated in our eastern and midland counties, but still breeds regularly in several parts of the west and north of England." Mr. Stevenson writes that a few visit Norfolk in the spring and autumn, but it has for some years ceased to breed in that county. Mr. Cecil Smith, writing to me from Somersetshire, says that "it would be numerous in most parts of this county if it were not for the gamekeepers, who try to trap it on every opportunity; and as it is a stupid bird, it easily falls a victim. In North Devon it is more numerous than here, and seems to have been unusually so this autumn and winter; for, when at Mr. Rowe's shop at Barnstaple in November last, I saw three or four which he had not then had time to skin, and several others which were being set up; since that he has written me word he has had many more. In the Channel Islands it appears to be an occasional straggler; when I was in Guernsey, in November 1871, I saw one in the flesh at the shop of Mr. Couch, the bird-stuffer, which had just been shot in Alderney; and he subsequently wrote to me of others which had been shot in Guernsey.

"The contents of the stomach of a Buzzard which had been caught at Cothelston, on the Quantock Hills, in November 1874, seem worth mentioning. There was only a little dark flesh in the crop; the stomach was quite full and much distended, and contained a few feathers, a great many earwigs, several grains of barley, and one or two of wheat, a good many white stones, a claw and part of the skin of the foot of some other bird, a few small bones, parts of the gizzard of some bird, and a good deal of rubbish that looked like old bents of grass chopped up. Supposing the gizzard to have been that of a Woodpigeon, a good many of these miscellaneous contents may be accounted for, but scarcely the earwigs, which the Buzzard must probably have caught for himself."

In Scotland, Mr. R. Gray writes, "although it is still found in some numbers in the Inner

Hebrides, where it breeds, I have not been able to trace it to the outer islands. On the whole of the western mainland, however, it is met with sparingly, and appears in some of the lower districts more numerously in autumn than at other seasons, being in this respect something like the next species. It is frequently trapped in the district of Campsie, where limited numbers seem to linger a week or two during their autumnal wanderings."

According to Thompson (B. of Ireland, i. p. 73) it was to be found generally in suitable localities throughout Ireland, about twenty-five or thirty years ago; but since then it has doubtless decreased greatly in numbers, though it may possibly still breed in some of the densely wooded localities. I have, however, no recent data respecting its occurrence in that country, and can merely repeat what Professor Newton says—viz. that, in Mr. Watter's opinion, it was chiefly confined to the northern counties of Ireland, where it bred along the basaltic precipices of the coast; "but," Professor Newton adds, "it is doubtful whether such is now the case." It does not appear to have been met with in Iceland; but in Scandinavia it is a common species, perhaps one of the most numerous of the Raptores, and breeds throughout the country, except in the extreme north. According to Mr. Collett it breeds commonly in the south-eastern lowlands of Norway, especially near Christiania, is common in Land and Valders, and is found in the Gudbrandsdale, as high as the fell-ridges. It is, he adds, scarcely possible to define the northern limit of its range with any degree of certainty. Professor Esmark believes that he observed it in East Finmark in the summer of 1866. It is met with not unfrequently on the west coast, as, for instance, at Stavanger, in Hardanger, and on the Söndfjord. On the fell-sides it does not range as high as the subalpine region. It arrives in Sweden in March or April, and is, during the summer, one of the commonest birds of prey in the southern and central portions of the country, ranging occasionally as far north as Lapland; and the late Professor Sundevall states (Sv. Fogl. p. 226) that he has seen it in the flat country below Muonioniska, in 68° N. lat. From Skåne to Norrland it is, he adds, the most numerous of the birds of prey, and is very generally distributed throughout the country. In Finland it is common in the southern and central portions of the country, but becomes rarer in the north. It is stated to be tolerably common in the Archangel Government, in Northern Russia; and Mr. L. Sabanäeff says that it is common enough in the neighbourhood of Moscow and in the Vologda Government. It occurs in the Voronege Government during passage, and breeds numerously in the country through which the Volga flows, and is, according to Eversmann, not uncommon in the wooded portions of the southern steppes. In the western Ural it is common, and occurs as far north as about 59° N. lat. In the birch-woods on the eastern slope of the Ural, in the Ekaterinburg district, it becomes much rarer, and is, he (Sabanäeff) states, not found at all in the Schadrinsk district. There is, I may add, some doubt as to whether all the information respecting its occurrence in Russia refers to the present species or *B. desertorum*; for I have received this latter from Archangel, and Messrs. Alston and Harvie-Brown remark that many of the Buzzards obtained near Archangel were very rufous, which makes it probable that at least some of those they refer to were *B. desertorum* and not *B. vulgaris*.

Throughout the Baltic Provinces, Poland, and North Germany the common Buzzard breeds numerously in suitable localities, and is one of the best-known of the Raptores; and in Denmark, Mr. A. Benzon informs me, "it is numerous throughout the country, and breeds both in the

larger woods and small groves, and even in small isolated groups of trees. It is a migrant, arriving, according to the season, from the latter part of February to the beginning of April; but this year (1875), as we had from 16° to 17° Cent. of frost in the night between the 22nd and 23rd March, we shall scarcely see any Buzzards until late in April. In September or October it migrates southward again; but in very mild seasons stragglers are met with throughout the winter." In Western Germany and the Rhenish Provinces I have frequently, almost daily, observed or heard the loud wailing cry of the Buzzard during the nesting-season; and it is said to breed in small numbers in Belgium, where, however, as a rule, it is said by Baron De Selys to be a winter visitant, arriving early in the autumn and leaving again in April. Heer van Wickevoort-Crommelin informs me that in Holland it breeds in the eastern provinces and only rarely in the western part, but is extremely numerous during the autumn passage, at which season in 1869 he obtained upwards of a hundred specimens. In a letter from Mr. H. M. Labouchere, however, this latter gentleman informs me that it breeds in Southern Holland. In France it is resident and tolerably numerous; and it is also said to be common in Portugal. I met with it in the different parts of Spain where I collected; and it is stated by the different ornithologists who have written on the avifauna of that country to breed commonly in the wooded portions.

In Savoy it is one of the commonest birds of prey, and is very abundant throughout Italy at all seasons of the year, and resident also in Sardinia and Sicily. Mr. A. B. Brooke remarks (Ibis, 1873, p. 150) that the Buzzards he obtained in Sardinia were extremely small in size compared with those from the continent.

In Greece and the Ionian Islands it is said to occur during winter. Lord Lilford found it common in Corfu and Epirus early in the year; but it disappeared late in February, and he did not observe it until the following November; he observed very few, however, during the ensuing winter. He adds that he saw one near Govino in June 1858. Both Lindermayer and Von der Mühle speak of it as being common in Greece during the winter, leaving for the north in March; but the former gentleman states that it breeds in Northern Greece. In Southern Germany it is common; and Dr. A. Fritsch states that it is resident in Bohemia. I observed it in Servia and Wallachia; and Messrs. Elwes and Buckley say that it is not uncommon in the wooded districts of Bulgaria. It is also stated by Von Nordmann to be abundant in Southern Russia. It occurs in Asia Minor during winter, but is said by Dr. Krüper to be rare near Smyrna; and he adds that a few remain there throughout the summer. He found a nest, containing two eggs, on the 20th May, and says that three pairs remained to breed near Burnova in the previous season. Canon Tristram, who observed it in Palestine, says (Ibis, 1865, p. 254):— it "was very plentiful in the plains of Phœnicia and Acre during winter, resorting to the gardens and orchards or perching on trees in the open plains. It is also common at that season in the Lebanon. We shot one in December close to Mount Carmel, the most southerly point at which we observed it; but it never afterwards came under our notice." It appears to be a very rare straggler in Africa, as the various authors on the ornithology of that country all agree in stating that it is only occasionally seen.

Von Heuglin states (Orn. N.O.-Afr. p. 92) that it occurs in North-east Africa, but is certainly an extremely rare straggler during the winter, as during the many years he collected there

he only saw two, viz. in the neighbourhood of Cairo and in the province of Scherqieh, in February and March. It is stated by Loche to be common in Algeria; but this statement is not confirmed by other ornithologists, and it appears probable that he mistook *Buteo desertorum* (which species inhabits Algeria) for the present bird. It is stated to inhabit the Canaries and Madeira; and Dr. Carl Bolle says that he examined a specimen in the collection of Don Manoel Leon, of Ciudad de las Palmas, which was killed in the Canaries, and which he identifies with our European bird. Mr. Godman mentions that Madeiran and Canarian specimens are dark, like our bird; but he did not succeed in securing specimens. In the Azores, however, the present species does not appear to occur, but only *B. desertorum*—a fact of which I was unaware until after my article on *B. desertorum* was published, when, on commencing the present article, I examined Mr. Godman's specimens, and ascertained that they were not, as was supposed, *B. vulgaris*, but *B. desertorum.*

It is somewhat difficult to define the eastern limits of the range of the present species. As above stated, Sabanäeff says that it is not found as far east as Schadrinsk; and although Von Middendorff states that he met with it in Eastern Siberia, I cannot but regard it as extremely doubtful if the bird found by him there really was *B. vulgaris.* According to Severtzoff it is a very rare winter visitant to the north-eastern part of Turkestan; but it was not met with in Persia by Mr. Blanford and Major St. John. It has been recorded from India; but, according to Mr. A. O. Hume (Rough Notes, p. 261), it appears very questionable if it really does occur there; and he adds that every Indian-killed Buzzard sent to him as *B. vulgaris* proved on examination to be *B. ferox.*

In its habits and general appearance the Buzzard is a heavy lazy bird, with but little of the sprightliness and activity of the true Falcons. It feeds chiefly on field-mice, moles, lizards, snakes, frogs, and insects, and rarely, if ever, strikes down birds unless they are weakly or diseased, though it not unfrequently preys on the young ones, and will pick up young hares and rabbits when it has the chance of so doing. It is usually seen sitting on a low tree or fence, or else on a stone or some such place, where it can watch for its prey; for, unlike the Harriers, it seldom hunts after prey on the wing, quartering the ground, but prefers to sit and watch for it. In the breeding-season I have frequently seen it circling with apparent ease at a great altitude in the air above the grove where its nest was placed; but usually it is not seen flying high, and is more frequently disturbed whilst sitting quietly on some secluded perch than seen flying about. When circling round it utters a loud, clear, mewing cry, which may be heard at a great distance and somewhat resembles the mewing of a cat. The Buzzard, unable to catch a strong-winged bird, and feeding chiefly on mice, is not a destructive species; it is therefore to be regretted that it is so rapidly becoming extinct in Great Britain. Mr. Benzon, writing to me respecting the nature of its food in Denmark, says that "it feeds chiefly on field- and wood-mice, but is not very particular, as it will eat moles, small birds (especially young ones), and even dead fish that have been cast up on the shores of the lakes; nor does it despise carrion." Mr. Collett says that in the stomach of a female shot near Christiania in April 1872, he found "fragments of a *Sorex vulgaris*, two *Arvicola glareola*, and an *Arvicola agrestis*," and from the stomach of another he took a *Coluber natrix*; and Mr. Meves states that he shot a young bird of the year on the 25th September, near Stockholm, and that the contents of its

stomach were as follows—"five *Sorex vulgaris*, nine large larvæ of *Sphinx elpenor*, two of *Sph. ocellata*, two *Locusta verrucivora*, and five or six smaller grasshoppers." According to Pastor Snell, the Buzzard being too slow on the wing, and therefore unable to catch birds, is sometimes during the winter season reduced to great straits, and will then even feed on berries and wild fruits, such as the fruit of *Prunus spinosa* and the berries of the dog-rose (*Rosa canina*). He relates that he has seen one sitting on a hedge and greedily plucking and devouring the latter berries.

Though, as a rule, the Buzzard is a peaceable and quiet bird, yet, during the breeding-season, it has been known to fight desperately. Mr. Benzon informs me that in Northern Seeland (Denmark) an acquaintance of his witnessed a tough battle between two Buzzards, which, after fighting for some time in the air, fell to the ground whilst in close combat, and still continued their duel with such ferocity that he was able to walk up to and kill them with a riding-whip.

Though one would scarcely consider the flesh of a Buzzard fit for human food, yet Nilsson states (Sk. Fauna, Fogl. i. p. 74) that in Southern Sweden considerable numbers are caught and used for food. "In Skanör," he writes, "and especially in Falsterbo, numbers of Buzzards are annually caught and used for household purposes. In October, when they pass through Skane on their passage to the south, they remain for some time on the outermost point of land to await a suitable westerly wind to cross. Large numbers collect and roost at night in the trees (especially in the willows) which grow there. When the darkness sets in, two men go in company to catch them, one with a sack, and the other with a stout cudgel. The latter climbs quietly up into the tree, where he can just distinguish the bird, whilst the other remains below; and so soon as the climber has got up to where he can reach a bird, he catches it by the legs with the left hand, and either twists its neck with his right hand or stuns it with a blow of the cudgel, and throws it down to his companion on the ground, who crams it into the sack. In this manner two men can catch thirty or forty in an evening, or, according to Borgm. C., as many even as seventy or eighty; and Captain E. relates that twenty were obtained one evening from the same tree. They are easiest to catch when it is dark and blowing hard, so that the bird cannot easily hear the noise. In all, many hundreds are caught annually, some of which are cooked fresh or made into soup, but most are salted down and kept for use during the winter."

The Buzzard is a somewhat early breeder, the eggs being deposited either in April or, in some instances, even late in March. In Scotland, according to Professor Newton, it generally places its nest on rocks, or on the edges of steep scars or beds of torrents; but, so far as my own experience goes, it breeds in Germany and Scandinavia in non-evergreen trees, placing the nest either tolerably high or at no great altitude from the ground. Mr. Benzon writes to me from Copenhagen as follows:—"I have only found the Buzzard breeding in deciduous trees—beeches or oaks, seldom elms; but it is probable that it chooses any suitable non-evergreen tree. Its nest is rarely placed as high as those of the other larger Raptores, and is sometimes not higher than a couple of fathoms or so above the ground. The nest is less than that of the Kite, being about 40–45 centimetres in outside diameter, and is constructed of larger branches in the foundation (or not unfrequently an old Crow's nest is made use of); and the inner lining consists of grass &c., and sometimes even a few feathers are used. The diameter of the inner cup is

about 20 centimetres, and the depth about 10 centimetres. The eggs are deposited in about the first half of April; and the earliest date I have taken a nest was on the 9th April, when I took three eggs out of it. Sometimes it does not lay until early in May, especially in cold and late seasons; and the young birds rarely breed before May. The usual number of eggs deposited is three or four; but exceptionally two or five are found." A nest obtained by Wolley in Scotland was made of heather-stalks lined with *Luzula*.

The eggs of the Buzzard are milk-blue, or bluish white, marked and blotched with reddish brown surface-spots and pale violet-grey (or rarely brownish) shell-markings. Some are richly marked, whereas others are almost unspotted bluish white. Most of the eggs in my collection, one or two of which are British-taken, the rest being chiefly from Germany, are tolerably richly marked; but one egg from Pomerania is pure white with a bluish tinge, and one or two from Northern Germany are but very slightly marked with colour. In size the series in my collection vary from $2\frac{3}{40}$ by $1\frac{32}{40}$ to $2\frac{18}{40}$ by $1\frac{36}{40}$ inch, and, as a rule, are rather round in shape, tapering nearly as much towards the one end as towards the other. Mr. Benzon informs me that out of 250 eggs collected in Denmark, and now in his possession, about sixty are either unmarked or have very faint markings. The sizes he gives as from 54 by 43 to 59 by 46 millimetres.

The specimens figured are an adult male of the dark variety (which I consider to be the most common of all the different varieties), which was obtained in Sweden, and one of the pale whitish varieties from near Stettin, both being in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, pull. Belgium (*E. Dubois*). *b*, ♀. Near Stettin, 1861 (*H. E. D.*). *c*, ♂. Falster, Denmark, March, 20th, 1870 (*A. Benzon*). *d*, ♂. Hareskov, Seeland, September 13th, 1870 (*A. B.*). *e*, ♂. Skanör, Sweden, October 10th, 1868 (*T. E. Buckley*). *f*, ♀. Wermland, Sweden, 1868. *g, pull.* Wermland, May 15th, 1872 (*W. Schlüter*).

E Mus. Howard Saunders.

a, ♀. Shot from nest, Coto del Rey, April 19th. *b*, ♀. Near Seville. *c*, ♂. Thuringia (white var.). *d*, ♀. Skanör, Sweden, October 18th, 1868 (*T. E. Buckley*).



Mintern Bros. imp

AFRICAN BUZZARD.
BUTEO DESERTORUM

BUTEO DESERTORUM.

(AFRICAN BUZZARD.)

Le Rougri, Levaill. Ois. d'Afr. i. p. 77, pl. 17 (1799).
Falco desertorum, Daud. Traité d'Orn. ii. p. 162 (1800).
Buteo desertorum (Daud.), Vieill. Nouv. Dic. iv. p. 478 (1816).
Buteo rufiventer, Jerd. Ill. Ind. Orn. pl. 27 (1847).
Falco cirtensis, Levaill. jun., Expl. Sci. de l'Alg. pl. 3 (1850).
Buteo capensis, Temm. & Schl. Faun. Japon. Aves, p. 16 (1850).
Buteo cirtensis (Levaill.), Bp. Rev. et Mag. de Zool. 1854, p. 532, sp. 67.
Buteo vulpinus, Licht. Nomencl. Av. p. 3 (1854).
Buteo minor, Heugl. Syst. Uebers. p. 5 (1856).
Buteo tachardus, Salvin, Ibis, 1859, p. 183 (nec Daud.).
Buteo vulgaris, var. *capensis*, Pelz. Verh. zool.-bot. Gesells. Wien, 1862, p. 144.
Buteo vulgaris, Jerdon, B. of India, i. p. 87 (1862, nec Leach).
Buteo delalandi, Des Murs, Rev. et Mag. de Zool. 1863, p. 52.
Buteo rufinus, Taczanowski, J. f. O. 1870, p. 37 (nec Cretzsch.).
Buteo ferox, Heuglin, J. f. O. 1870, p. 384 (nec Gm.).

Khabas, Moorish.

Figuræ notabiles.

Levaill. *l. c.*; Jerdon, *l. c.*

Ad. capite et collo superiore sordidè albidis, fronte et nuchâ vix brunneo notatis, capitis lateribus rufescente notatis et striatis: dorso saturatè brunneo, plumis fere omnibus ferrugineo marginatis: uropygio sordidè brunneo, plumis pallidiore marginatis: remigibus in pogonio externo et versus apicem nigro-fuscis, in pogonio interno albidis vix ochrascente ferrugineo lavatis, et conspicuè in dimidio interno nigro-fusco fasciatis: tectricibus alarum dorso concoloribus: rectricibus centralibus ferrugineis, fasciis obsoletis et fasciâ conspicuâ subapicali notatis, reliquis in pogonio externo grisescenti-brunneis et in pogonio interno pallidè cervinis, in dimidio interno pogonii grisescente brunneo fasciatis: gutture, corpore subtùs cum subtectricibus alarum pallidè ferrugineis albido immixtis, plumis fere omnibus centraliter fuscis: abdomine imo et subcaudalibus albido apicatis aut marginatis: rostro corneo: cerâ cum pedibus flavis, unguibus nigricantibus: iride rufescenti-fuscâ.

Juv. corpore et capite suprà saturatè fuscis vix rufescente immixtis: supracaudalibus versus apicem sordidè ferrugineo fasciatis et eodem colore apicatis: remigibus ut in adulto sed non ochrascente ferrugineo lavatis: caudâ rufescenti-cervinâ, valdè nigro-fusco transfasciatâ: capitis lateribus albidis, fusco striatis: gulâ et gutture albis, fere immaculatis: corpore subtùs albo, pectore et abdominis lateribus nigro-fusco notatis: tibiæ plumis sordidè fuscis rufescente cervino immixtis et fasciatis.

Adult Male (Tangier). Head and upper neck dull greyish white, on the forehead slightly marked with dark brown, and sides of the head slightly marked with rufous; back and wing-coverts dark earth-brown,

almost all the feathers margined with rusty red; quills blackish brown on the outer web and terminal portion, but on the inner web, above the margination, white on the outer and basal portion slightly washed with rufous, and near the shaft greyish brown with broad dark bars extending over half the web; rump dull earth-brown, the feathers having lighter edges; the two central rectrices rusty red, with obsolete dark bars and a broad subterminal blackish brown band, remaining rectrices light greyish earth-brown on the outer web, and on the inner web near the shaft with greyish brown bars extending over half the web, the rest being dull buff—the under surface of the tail, when closed, being buffy white, with very obsolete markings; lower throat, under surface of the body, thigh-feathers, and under wing-coverts pale rufous, most of the feathers with darker central markings, and here and there the white basal portions of the feathers showing through; feathers on the lower abdomen and under tail-coverts edged or tipped with white, some being almost entirely white; bill bluish horn; iris reddish brown; legs and cere yellow; claws dark horn. Total length about 19 inches, culmen 1·4, wing 14·5, tail 8·2, tarsus 2·7.

Young (South Africa). Resembles the ordinary dark form of *Buteo vulgaris*, but is much smaller in size, has the upper parts slightly intermixed with rufous; the tail and upper tail-coverts are washed with rufous, and the underparts are much whiter and less marked with blackish brown; the thigh-feathers are slightly washed with rufous. A specimen from near Constantinople, however, has the entire breast dark brown with lighter markings.

Obs. Although in the adult plumage this species is easily distinguishable from the common Buzzard, yet in the immature dress they resemble each other very closely, but may almost always be readily distinguished by the much smaller size of the African Buzzard, which latter has generally a good deal of rufous in the plumage, the thigh-feathers being always washed with rufous, and usually the tail also. As regards the size, my series of five males vary as follows—culmen 1·3–1·4, wing 13·1–14·5, tail 7·8–8·2, tarsus 2·6–2·72,—the sixth, a female from South Africa, measuring—culmen 1·5, wing 15·0, tail 8·5, tarsus 2·8. The specimen from Archangel is one of the smaller ones, as it measures only—culmen 1·3, wing 13·5, tail 8·0, tarsus 2·6. Mr. Saunders's Spanish specimen, a male, about which I have some slight doubts, although both Mr. J. H. Gurney and Mr. Swinhoe pronounce it to be *B. desertorum*, measures—culmen 1·5, wing 14·0, tail 8·5, tarsus 2·8. In plumage it agrees tolerably closely with specimens from South Africa, but is not quite so rufous. On comparing it with my series of *Buteo vulgaris*, I think that the balance is in favour of its being *B. desertorum*, and have included it as such.

This small Buzzard inhabits South-eastern Europe, Africa, and India, being but rarely met with elsewhere in Europe, except, as above stated, in the south-eastern portion. It may, however, have been overlooked in some localities, and mistaken for the common Buzzard. It has been recorded from Thuringia, in Germany, by Kammerherr Otto von Krieger, who writes (J. f. O. 1873, p. 293) that he has on three occasions shot it when watching to shoot birds of prey, which are attracted by an Owl which is fastened within a short distance of the hiding-place for that purpose—the so-called "Krähenhütte-Jagd." The first was shot on the 18th September 1869, the second on the 19th September 1870, and the third on the 20th September 1871, all at Sondershausen. It does not appear to have been met with elsewhere in Northern or Central Europe, except in Archangel; and a specimen was obtained in Spain by Mr. Howard Saunders, who writes (Ibis, 1871, p. 63) that it was decided by Mr. J. H. Gurney to be a young male of this species. Mr. Gurney also writes (Ibis, 1870, p. 266) that he saw in the Museum at Lille

two specimens from Portugal. It does not appear to have occurred elsewhere in Southern Europe, except in Turkey and Russia, where it would appear to be found not unfrequently. Messrs. Elwes and Buckley write (Ibis, 1870, p. 72):—"Great numbers of this species have been observed by Mr. Alléon during the spring and autumn migration at Buyukdere; and we saw several specimens in his collection which agree in every respect with examples from North Africa. He also tells us that he has twice found the nest in the forest of Belgrade. Most of these birds probably pass through Turkey to Russia, where they are said to breed commonly; but a few, tempted by the beautiful woods on the Bulgarian coast, remain during the summer. A nest, from which the female bird was shot, was discovered by one of us on April 24th near Sindal, a village about twenty miles from Varna. It was lined with moss and green leaves, and contained three eggs, which differed but little from those of the common Buzzard. The cry is a shrill, melancholy whistle, not unlike that uttered by that species." In Russia it appears to be by no means rare on the southern Volga; and I have received a Buzzard from Archangel which undoubtedly belongs to the present species. It was sent to me by my collector there as a small variety of the common Buzzard, and I at first was almost inclined to refer it to that species; but a careful comparison with specimens from South-east Europe and Africa has convinced me that it really is *B. desertorum*; and it is in fact smaller than one of the males from South Africa. According to Hencke it is common near Astrachan, where, however, it is only a summer visitant, leaving for the south on the approach of winter. It breeds there, he says, and builds its nest on the high white poplars, depositing four or five eggs. Mr. Möschler has obtained specimens from Sarepta; and one, now in the British Museum, which was sent by Dr. Stader, was obtained in the Southern Ural. It passes through Asia Minor on its migration to and from its winter quarters, and doubtless also occurs in Palestine; but Canon Tristram did not meet with it in that country. In North-east Africa it is stated by Von Heuglin (Orn. N.O.-Afr. p. 91) to occur in autumn, winter, and spring, but does not appear to be very numerous. He observed it now and again in Western Abyssinia, and along the Blue Nile, both in the wooded country and in the steppes. In May 1861, he writes, "I met with four individuals of this species in the small oasis of Ain-Musah, in Arabia Petræa; they were very lean; and I found in their stomachs grubs, beetles, grasshoppers, a few lizards and chameleons." Neither Mr. Blanford nor Messrs. Finsch and Hartlaub appear to have met with it in the districts they embrace in the limits of their range; nor did Captain Shelley observe it in Egypt, where he thinks it probably occurs, but he fancies he saw it in Nubia. In North-west Africa it is likewise met with. Loche states that he met with several individuals in the provinces of Algeria and Constantine; and Mr. L. Taczanowski writes (J. f. O. 1870, p. 37) that he found it common in the hilly districts in the neighbourhood of Constantine, Batna, and in Bouarif—and adds that though Loche includes *Buteo vulgaris* in his list he never observed that species, but only *Buteo desertorum*. Mr. Salvin also met with it in the Atlas range, and says (Ibis, 1859, p. 183):—"This species is by no means common in the district where rapacious birds so abound. I have but few instances of its occurrence noted. One of these was at Khifan M'sakta, where a pair had their nest. On another occasion I saw two in a rocky pass near Ras el Alia. Subsequently Mr. Simpson shot one near the salt lake of Guerah el Tharf. The eggs, as might be expected, differ immaterially from those of the common Buzzard." I have seen several specimens from Tangier, where, according to Colonel

Irby, it is said by Favier to be "resident, and found in considerable numbers on all sides. Their food consists of rats, mice, snakes, frogs, large insects, leverets, rabbits, and chickens. They nest on rocks, laying two eggs (in March and April) of a white or greenish-white colour, spotted with yellowish or reddish brown; sometimes these spots completely cover the thick end of the egg. The males sit in their turn. The irides are yellow; the third and fourth quill-feathers, equal in length, are the longest in the wing. Twenty-four eggs of this Buzzard," continues Favier, "have passed through my hands." To which Colonel Irby himself adds the following notes:—"On the 26th of April, 1871, we found a nest on the top of a very tall olive-tree in a santo or burial-ground in Garbia, shooting both the old birds, one off the nest, which was like a Kite's, and was lined with fresh olive-twigs and rags. It contained two eggs on the point of hatching; they were of a white colour, thinly marked all over with very small, short, reddish black lines, and were more rounded than average eggs of either of the Kites, though I have seen eggs of both *Milvus ictinus* and *M. migrans* very like them. In this santo, perhaps two acres in extent, were some of the tallest olive-trees I have ever seen, on which were, besides the Buzzard's nest, one of the common Kite, with young, two of the Black Kite; and in a bramble-brake at the edge was a nest of Marsh-Harriers, with young. The day before, we took Black-Kite's eggs quite fresh, which shows the relative time of nesting of the above-named species. I always saw this Buzzard in wooded districts, like our common Buzzard, generally sitting on the bough of some dead tree; and this makes me wonder that Favier did not mention it as nesting on trees. On the Spanish side of the Straits I never met with it; nor have I seen a specimen which could be referred to this species. It is slightly smaller in size, and easily recognized within a hundred yards or so, from the reddish colour. The immature birds would be harder to distinguish without handling them."

Its range in Africa is very extensive, as it has been found as far south as the Cape colony. Messrs. Shelley and Buckley record it (Ibis, 1872, p. 292) from the Gold Coast as "plentiful in the more wooded districts, where they frequent the high trees." Andersson found it in Damara Land, and states that it is "not uncommon in Ondonga, but is very wary." Mr. E. L. Layard speaks of it as being "not common, but widely distributed," in South Africa. Its note, he says, "is a weak stridulous scream. It frequents open country dotted with jungle, and is found also in the forest about George and the Knysna." According to Dr. G. Hartlaub (J. f. O. 1860, p. 11) it has also been obtained from Madagascar.

To the eastward it is met with as far as India. Mr. Blanford did not meet with it in Persia, where, he says, he fully believes that it occurs; and Dr. Jerdon states that it has been noted from there. He adds that it is rare in India, where it has probably been overlooked by collectors, and occurs throughout that country and Ceylon.

Mr. Hume states (Rough Notes, p. 270) that, so far as he knows, "it is confined to the Neilgherries and Himalayas, and appears to be not uncommon anywhere in these hills from Murree to Darjeeling."

Respecting the habits of this Buzzard I find but little recorded; and beyond what I give above I find nothing of interest except the following notes of Messrs. Alléon and Vian, translated from the Rev. Zool. 1869, p. 369. These gentlemen, who discovered that this species is found not uncommonly in Turkey, write as follows:—"These Buzzards are much more numerous on both migrations than the common Buzzard, and at the time when the grasshoppers arrive in

the autumn they remain some time on the shores of the Black Sea and Bosphorus. Flocks of these Buzzards are then to be seen from sunrise to sunset, continually occupied in clearing both the water and the land from these grasshoppers; but we have never noticed the common Buzzard take to this prey, although the latter species is common in the same districts and at the season when the grasshoppers arrive. This predilection of the Desert-Buzzard for a prey disdained by the common Buzzard, seems to us to warrant the separation of the two species. It is true that both are so variable in their plumage that it is difficult to form a diagnosis upon skins; yet we observe characteristics which we will not exactly call constant, but general, in the Desert-Buzzard, such as the smaller size, and the rust-coloured thighs—differences, however, which are more marked in the living bird, and especially in a state of liberty. Whilst the common Buzzard, with its heavy frame, waits with indolence for hours at a time for the passage of its prey, or seeks for it carelessly with a uniform and rectilinear flight, the Desert-Buzzard, with its more elegant body and longer limbs, hunts in evolutions almost resembling those of the Kite or the Swallow; in fact, the experienced sportsman can always distinguish the two species on the wing,

"We have kept a caged albino variety, which had been slightly wounded. From the first it was much less wild than other individuals of this species, and has always retained this characteristic.

"It nests in the forest of Belgrade, near Constantinople, generally in the midst of thick underwood, making a nearly flat nest, about three or four yards from the ground. We captured a female on the 8th June, 1865, the nest containing three young, from five to eight days old."

I possess one egg of this Buzzard, taken in Algeria, which resembles those of the common Buzzard, but is somewhat smaller than the general average, and much less spotted than most eggs of *Buteo vulgaris* which I have seen; indeed this, as well as all other authentic eggs of this species seen by me, is remarkably devoid of blotches and has, like eggs of the Kite, only short dark reddish lines scattered sparingly over the surface of the shell.

The specimens figured are an old male from Tangier and a young bird from South Africa, these being the birds described, both of which are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Majmacza, near Archangel, September 4th, 1873 (*Piottuch*). *b*, ♂. Ortakeuy hills, near Constantinople, April 9th, 1864 (*T. Robson*). *c*, ♂. Tangier (*Olcese*). *d*, *e*, *f*. George, South Africa (*W. Atmore*).

E Mus. Howard Saunders.

a, ♂. Near Seville, October 1868. *b*, ♀. Tangier, February 1871.



J.G.Keulemans del

Mintern Bros imp

LONG-LEGGED BUZZARD.
BUTEO FEROX.

BUTEO FEROX.

(LONG-LEGGED BUZZARD.)

Accipiter ferox, S. G. Gm. Nov. Com. Acad. Petrop. xv. p. 442, pl. x. (1770).
Falco ferox, J. F. Gm. Syst. Nat. i. p. 260 (1788).
Falco astracanus, Shaw, Gen. Zool. vii. p. 85 (1809).
Falco rufinus, Cretzsch. in Rüpp. Atlas, p. 40, pl. 27 (1826).
Buteo canescens, Hodgson, Beng. Sporting Mag. viii. p. 180 (1836).
Buteo longipes, Jerd. Madr. Journal, x. p. 75 (1839).
Butaquila leucocephala, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Buteo leucocephalus, Hodgs. P. Z. S. 1845, p. 37.
Buteo aquilinus, Hodgs. J. As. Soc. Beng. xiv. p. 176 (1845).
Buteo rufinus (Cretzsch.), Gray, Gen. of Birds, i. p. 11 (1844–49).
Buteo leucurus, J. F. Naumann, Naumannia, 1853, p. 256, pl. 5.
Butaëtos leucurus (Naum.), Möschler, Naumannia, 1853, p. 296.
Butaëtus leucurus (Naum.), Thienem. J. f. Orn. 1853, Extrah. p. 105.
Falco (Buteo) ferox (Gm.), Thienem. tom. cit. p. 108.
Buteo eximius, C. L. Brehm, Naumannia, 1855, p. 4.
Buteo pectoralis (Vieill.), Strickl. Orn. Syn. p. 35 (1855, nec Vieill.).
Circaëtus ferox (Gm.), Strickl. op. cit. p. 46 (1855).
Limnosalus africanus, Würt. Naumannia, 1857, p. 432.
Buteo ferox, var. *obscura*, Pelz. Verh. z.-b. Gesellsch. Wien, 1862, p. 147.
Buteo fuliginosus, A. O. Hume, Ibis, 1869, p. 356.
Buteo nigricans, Severtzoff, Turk. Jevotnie, pp. 63 & 112 (1873).

Weiss-schwänziger Adlerbussard, German.

Figuræ notabiles.

Gmelin, *l. c.*; Rüpp. Atlas, pl. 27; Naumann, Naumannia, 1853, pl. 5.

♂ *ad.* pileo et nuchâ pallidè rufescenti-cervinis brunneo immixto, plumis ad basin albidis: corpore suprà fusco, plumis rufescente marginatis: primariis saturatè fuscis, in pogonio externo cinereo lavatis, et pogonii interni dimidio basali albis: secundariis in pogonio externo saturatè cinereis conspicuè nigro-fusco fasciatis et marmoratis, et in pogonio interno pallidè cinereis fere albidis similiter fasciatis: dorso imo, uropygio et supracaudalibus saturatè fuscis, his rufescente fulvido immixto: caudâ albidâ vix ochraceo versus apicem rufescente lavatâ, rectricibus externis ad basin vix canescente adumbratis: capitis lateribus, gutture et pectore superiore albidis, illis vix fusco striatis, et his centraliter fulvido notatis: pectore imo et corpore reliquo subtùs rufescente fulvido brunneo immixto, hypochondriis castaneis et subcaudalibus rufescenti-ochraceis: cerâ et pedibus flavidis: iride fulvidâ: rostro saturatè corneo, ad basin plumbeo.

♀ *ad.* mari similis sed minor.

Juv. adulto similis sed ubique saturatior et sordidior, pileo brunnescentiore: corpore subtùs sordidè rufescenti-fulvido, plumis centraliter nigro-fusco striatis: caudâ sordidè cinereâ, nigro-fusco fasciatâ, rufescente apicatâ et vix notatâ.

Adult Male (Sarepta). Crown and nape pale creamy rufous and brown, the bases of the feathers white, these latter showing through, especially on the nape, giving the head a very light appearance; upper portion of the back, scapulars, and wing-coverts dark brown, margined with tawny rufous, some of the wing-coverts with the basal portion marked with dull grey, which shows through here and there; quills dark brown, primaries washed with silvery grey on the outer web, and with the basal half or nearly two thirds of the inner web white, secondaries dark grey on the outer web, mottled and broadly barred with dark brown, and lighter grey on the inner web, becoming white, similarly barred and mottled; lower back and rump dark brown; tail-coverts varied dark brown and tawny rufous; tail creamy white at the base, gradually darkening to creamy rufous towards the tip, only the outer rectrix on each side slightly marked with brown towards the tip, and the outer feathers shaded with grey on the base of the outer web; sides of the head and chin whitish, with narrow brownish shaft-streaks, and slightly washed with rufous on the cheeks; throat and upper breast creamy white, washed with rufous, gradually deepening in colour towards the lower breast, which, with the rest of the underparts, is tawny rufous intermixed with brown, becoming chestnut on the flanks and sides; under tail-coverts creamy rufous; under wing-coverts varied brown and dark tawny rufous; cere yellowish; bill horn-blue, darker towards the tip; iris dull tawny; legs yellowish. Total length about 2 feet, culmen 1·8 inch, wing 16·7, tail 9·5, tarsus 3·7; tarsus feathered to within about 2·2 inches of the root of the toes.

Adult Female (Wilderness of Judæa, 6th February). This specimen is evidently rather more adult than the male above described, which it resembles, except that it is larger, has the sides of the head paler, and the throat and breast white, very slightly washed with pale rufous, and marked with dark reddish brown shaft-streaks. Total length about 26 inches, culmen 1·9, wing 18·3, tail 10·2, tarsus 3·9.

Nestling (near Smyrna, 19th June, 1872). In general coloration this bird somewhat resembles the male above described; but the head is much darker, and the entire plumage also much darker and duller, the feathers on the upper parts with broad rufous margins; the underparts are dull rufous, with blackish-brown shaft-stripes; tail dark grey, with blackish brown cross bars, and slightly marked and tipped with rich rufous, most of the feathers with broad creamy white margins on the inner web, so that the under surface of the tail looks white.

Obs. Being fortunately in possession of a good series, in almost all stages of plumage, I am enabled to show the changes from the nestling plumage to the fully adult bird. Mr. Sharpe (Cat. of Accipitres, p. 178) has clearly made a mistake in considering that the dark-tailed bird figured by him is the very old bird, and that the creamy rufous tail is that of a younger bird; he may probably have been misled by the Sarepta collectors, who label the adult bird with a pale rufous tail, before it gets the white throat and chest, as being a young bird before the first moult. The nestling obtained by Dr. Krüper, above described, though its tail is nearly full-grown, has remains of down about the breast, and is clearly a very young bird. Except that it has the tail slightly marked with rufous, this latter resembles that of the dark form figured by Mr. Sharpe. A somewhat older bird from Turkestan has the tail pale ashy brown tipped with rufous, and crossed by nine dark brown bands; but the upper parts are slightly paler than the specimen figured by Mr. Sharpe. A third bird is as nearly as possible in the plumage of Mr. Sharpe's bird, as regards the upper parts, but has the throat and breast as in the old bird; the tail

is worn, and is being moulted; a new feather, about half-grown, is *uniform pale rufous*, shaded with greyish brown on the outer web, precisely similar to fresh tail-feathers in the adult bird above described, thus clearly proving that the bird changes the banded dark tail for a creamy rufous one, and not *vice versâ* as stated by Mr. Sharpe. Judging from my series, I should consider that the type of *B. aquilinus* (Cat. Acc. pl. viii.) is a rather dark bird in the plumage after the nestling-dress, when the rufous markings have toned down and become duller and less perceptible, and the tail has attained its full growth.

This very distinct species only inhabits the eastern and south-eastern portions of Europe, passing south into Africa during the winter months; in Asia it is found at least as far east as Northern and Central India; but I am doubtful if the species recorded from Eastern Siberia is the true *B. ferox*.

It has not been met with in the British Isles, Scandinavia, Germany, France, or Western Europe; but a specimen is stated by Count Salvadori (Ucc. d'Ital. p. 12) to have been captured near Genoa on the 8th April 1869, and is now preserved in the Museo Civico of that city. It does not appear to have ever occurred in Greece; but Messrs. Elwes and Buckley write (Ibis, 1870, p. 72) that M. Alléon informed them that one was killed near Constantinople in the winter of 1856; and, they add, Mr. Robson has also procured it there.

In Southern Russia it is tolerably common in the steppe country during the summer season, but does not appear to range far north, as Sabanäeff does not include it in his lists of the birds inhabiting Central Russia and the Ural range; but Mr. Jacovleff says that it is very common in the Calmuck and the Actubinsk steppes, and he frequently observed it early in June 1872, near Mount Bogdo, but only saw it near Astrachan during passage, as it rarely leaves the true steppes. Von Nordmann does not record it from the neighbourhood of Odessa; nor did Ménétries meet with it in the Caucasus. It has been found breeding near Smyrna, in Asia Minor, by Dr. Krüper, who has sent me both the nestling bird and eggs from there. He writes (J. f. O. 1869, p. 29) that it arrives there late in March or early in April, and is easily distinguishable by its rufous coloration and nearly white tail. A pair inhabited a rock about eight miles from Burnova; but he could not find the nest before June, when he traced the old birds carrying food to their young. Canon Tristram, who met with it in Palestine, writes (Ibis, 1865, p. 255) as follows:—"It is extremely numerous in every part of the country, and at all times of the year. It congregates in small flocks in the orangeries and olive-yards behind the Phœnician towns, consorting with *Circaetus gallicus*, and is equally abundant in the wildest recesses of the eastern mountains, or on the bare and boundless plains of the southern wilderness. In the south of Judæa in winter it is decidedly gregarious; but during the breeding-season it is found in pairs in the wooded wadys." It was also met with at Wady Gharandel, in the peninsula of Sinai, by Mr. C. W. Wyatt; and from Northern Africa it is recorded both as a winter visitant, and also breeds there. In North-east Africa it appears to be common; and Captain Shelley speaks of it (B. of Egypt, p. 201) as being "the most plentiful species of Buzzard throughout Egypt and Nubia. In Lower Egypt it is less frequently met with than higher up the Nile, and does not, I believe, winter in the Delta. It appears to be less abundant in some years than others; for in 1870 I only met with one specimen, at Kom Ombo, where it was breeding at the time. This specimen, unlike any other that I have ever seen, had a brown tail distinctly barred. In 1868 it was rarely

absent from any field where Quail were abundant; and in 1871 I found it very plentiful in the Fayoom. It is a bird of lazy habits, rarely flying far, even after being shot at, but soon alighting again upon some mound or heap of maize-stalks, from which it keeps watch over the fields. I have found it breeding in Egypt in April." Von Heuglin, Dr. Leith Adams, and Mr. Taylor, however, do not speak of it as found in North-east Africa during the breeding-season, but only met with it there during the winter; therefore it seems probable that only a few remain to breed, the major portion passing further north, and returning again for the winter. Von Heuglin states that he "met with it along the Nile as far south as the Azraq and the Abyssinian lowlands. It arrives in pairs and in families in August and September (and some remain to winter in Southern Egypt and Dongolah; but the larger proportion remain in East Sennaar, Takah, and at Mareb), leaving again in March." It does not appear to visit the more elevated portions of Abyssinia, as neither Mr. Blanford nor Mr. Jesse met with it when collecting in that country. It has been stated to inhabit North-western and even South Africa; but, so far as I can ascertain, only *Buteo desertorum* and not the present species occurs there.

To the eastward it occurs as far, at least, as India. It is stated by Messrs. Blanford and St. John to be perhaps the commonest Raptor in Persia; and the former gentleman adds that he has seen the skins of no other Buzzard from that country. Speaking of its range in India, Dr. Jerdon writes (B. of India, i. p. 89), it "is found throughout all the northern and central parts of India, frequenting the plains and low cultivated lands, especially irrigated fields, edges of tanks, &c. I have met with it in the Deccan and in Central India, but most abundant in the Gangetic valley, above Dinapore. It is also found in Nepal, and all the sub-Himalayan regions. It generally sits on a low tree, and watches for rats, frogs, lizards, and large insects, which it pounces on from its perch, or rarely takes a hunt over the ground in quest of food. Mr. Elliot says it is very abundant in Guzerat, preying on the numerous field-rats of that province (*Mus indicus*)." To this information I may add the following from the pen of Mr. A. O. Hume, who writes (Rough Notes, p. 274) as follows:—"It breeds in great numbers in March and April in the N.W. Punjab, the lower hills of the N.W. Himalayas, and Kashmere, east of the Jheelum; so far as I have yet been able to gather, very few pairs remain to breed in the plains. During the cold season they swarm all over the N.W. Provinces, the Punjab, and Rajpootana, making their way far down into Central India, throughout Oudh, and into Behar; but although, as Jerdon says, they are found much in low cultivated lands, especially irrigated fields, edges of jheels, &c. (where they prey mostly on frogs), their winter quarters, *par excellence*, is in the half-desert tracts of Northern and Western India, amongst the interminable colonies of the desert-rat (*Gerbillus erythrurus*), which is unquestionably their favourite food. In these localities they occur during the winter in surprising numbers; a dozen may be seen sitting within a circle of half a mile, and fifty counted in a morning's ride. Directly, however, the hot weather begins to set in their numbers decrease; and by the first of April all but solitary stragglers have retreated northwards to the Himalayas, or westwards across the Sutledge." It was met with by Severtzoff in Turkestan, and is stated by him to breed throughout the country. He divides it into three subspecies, which he calls *B. leucurus*, *B. rufinus*, and *B. nigricans*, all of which I infer should be included under the name of *Buteo ferox*, as he speaks of intermediate forms. I possess one specimen obtained by him, and labelled *B. rufinus*, which is identical with examples

from the Volga. Dr. Radde includes it in his work on South-eastern Siberia, and gives a somewhat detailed comparison of three specimens from Mongolia, with examples from Sarepta; but he states that his birds had the tarsi much more feathered than those from Sarepta; and this and other details given by him make it appear improbable that he really obtained true *B. ferox*, and I think it very possible that the birds he procured were *B. hemilasius*, Temm. et Schl., which species has lately been sent by Dr. Dybowski from Dauria.

In its habits the present species much resembles the common Buzzard, but is, if any thing, a more sluggish bird. It is said to be, as a rule, a desert-bird, frequenting for the most part the dry desert and bare treeless steppes, where it feeds on small mammals; and in localities where there is water, and frogs are to be found, it is stated to feed on them, and also on lizards and even snakes. Dr. Thienemann states (*l. c.*) that "it inhabits during the summer the bare steppes which skirt the Lower Volga on either side. It arrives in the neighbourhood of Sarepta late in March, and spreads over the treeless steppes, where it feeds both on small mammals and snakes and lizards, for which it watches, sitting on any small elevation in the steppe." Von Heuglin met with it in North-east Africa, frequenting bare isolated rocks, date-groves, on solitary sycamore or baobab trees, in the fields, on the sand bars, and also amongst ruins, or in the villages, in which last places it makes great havoc amongst the domestic poultry and pigeons. It is, he adds, very shy, but can be shot if one can find out where it roosts, as it regularly uses the same roosting-place.

It must breed in numbers near Sarepta, as so many of its eggs are annually sent from there. Dr. Thienemann says that it places its nest on the sides of the deep rifts which are found throughout the steppes. The nest is carelessly constructed of dried stems and grass, and lined with hair, wool, or felt. About the middle of April the eggs, from three to four, or rarely five, in number, are deposited. Canon Tristram, who met with it breeding in Palestine, writes (Ibis, 1865, p. 255) as follows:—"We found the nests both on trees and in rocks, generally in the latter. The first nest we took was on Mount Carmel, on a rocky ledge easy of access, on March 22nd; and it contained three eggs quite fresh and beautifully marked. The last fresh eggs we found were a pair near Mount Tabor, on May 1st. The eggs are of course larger than, but no way differently coloured from, those of the common Buzzard. The nest is large, but more neatly made than those of the Eagles, and well lined with woollen rags and the soft withered leaves of bulrushes and flags, and plastered with mud."

I possess a tolerably large series of the eggs of this Buzzard, all collected near Sarepta, and obtained through Mr. Möschler, except one from Smyrna, taken by Dr. Krüper. In general colour and markings they resemble those of the common Buzzard, being white, clouded and blotched with red, but are, as a rule, less richly coloured than the eggs of that species, most being white faintly clouded with pale red; one or two, however, are tolerably closely blotched with rich brownish red surface-spots, and here and there marked with faint purplish underlying shell-blotches. In size they measure from $2\frac{9}{40}$ by $1\frac{32}{40}$ to $2\frac{20}{40}$ by $1\frac{34}{40}$ inch. The precise dates of those from Sarepta are not given; but the one obtained by Dr. Krüper was taken on the 18th April, 1872.

The specimens figured are an adult male from Sarepta and a young bird which cannot have

long left the nest, from near Smyrna, these being the specimens described, and in my collection; but the adult female, also described, is one lent to me by Canon Tristram.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Sarepta (*H. F. Möschler*). *b*, ♀ *pull.* Near Smyrna, June 19th, 1872 (*Dr. Krüper*). *c*, ♀. Karakistak, Turkestan, August 30th, 1864 (*Severtzoff*). *d*, ♀. Murdan, India, November 15th, 1870 (*J. W. Johnson*). *e*, ♂, *f*, ♀. Murdan, December 1870 (*J. W. J.*). *g*. Koteguhr, December 1870.

E Mus. H. B. Tristram.

a, ♀. Wilderness of Judæa, February 6th, 1864 (*H. B. T.*). *b*, ♀. Gennesareth, March 9th, 1864 (*H. B. T.*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Volga, May 1871, shot from nest containing four eggs.

Genus ARCHIBUTEO.

Accipiter apud Brisson, Orn. i. p. 325 (1760).
Falco apud Gmelin, Syst. Nat. i. p. 260 (1788).
Buteo apud Leach, Syst. Cat. M. & B. Brit. Mus. p. 10 (1816).
Archibuteo, C. L. Brehm, Isis, 1828, p. 1269.
Triorchis apud Kaup, Natürl. Syst. p. 84 (1829).
Butaetes apud Lesson, Traité d'Orn. p. 83 (1831).

This genus, which contains four species, only one of which is found in the Western Palæarctic Region, is represented in the Palæarctic and Nearctic Regions, ranging as far south in the Old World as the Ethiopian Region, and in the New World down into Mexico.

In general habits the Rough-legged Buzzards very closely resemble the species belonging to the genus *Buteo*; but, as a rule, they appear to be less partial to forests and groves. During the day they hunt after their prey in the open country, retiring to the outskirts of some wood to roost for the night. They feed on small mammals, frogs, lizards, and insects, and only occasionally on birds, which they do not capture on the wing. Their call-note resembles that of the Buzzards.

They nest in cliffs and trees, constructing a somewhat bulky nest of twigs and branches lined with grass, and deposit from two to four, rarely five, bluish-white eggs, resembling those of the Buzzards, but subject, if any thing, to greater variations.

Archibuteo lagopus, the type of the genus, has the beak as in *Buteo*, the wings long, broad, the first quill short, being about equal to the eighth, the second slightly longer than the sixth, the third, fourth, and fifth about equal, the first four quills deeply notched on the inner web; tail moderate, even or very slightly rounded; tarsus closely feathered down to the toes, which are short, but strong; claws stout, acute, curved.



ROUGH-LEGGED BUZZARD.
ARCHIBUTEO LAGOPUS.



1/3

ROUGH-LEGGED BUZZARD.
IMMATURE.

ARCHIBUTEO LAGOPUS.

(ROUGH-LEGGED BUZZARD.)

Accipiter falco leucocephalus, Briss. Orn. i. p. 325 (1760).
Falco lagopus, Brünn. Orn. Bor. p. 4 (1764).
Falco lagopus, Gm. Syst. Nat. i. p. 260 (1788, ex Brünn.).
Falco sclavonicus, Lath. Ind. Orn. i. p. 26 (1790).
La Buse gantée, Levaill. Ois d'Afr. i. p. 79, pl. 18 (1799).
Buteo pennatus, Daud. Traité d'Orn. ii. p. 156 (1800).
Falco plumipes, Daud. op. cit. ii. p. 163 (1800, ex Levaill.).
Buteo lagopus (Gm.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 10 (1816).
Archibuteo lagopus (Gm.), C. L. Brehm, Isis, 1828, p. 1269.
Archibuteo africanus, C. L. Brehm, Vög. Deutschl. p. 40 (1831, ex Levaill.).
Archibuteo planiceps, C. L. Brehm, op. cit. p. 40 (1831).
Archibuteo alticeps, C. L. Brehm, op. cit. p. 41 (1831).
Falco sublagopus, C. L. Brehm, op. cit. p. 41 (1831).
Butaetes buteo, Less. Traité d'Orn. p. 83 (1831, nec Linn.).
Butaetes lagopus (Gm.), Bp. Comp. List, p. 3 (1838).

Archibuse pattue, French; *Rauhfuss-Bussard*, *Schneeaar*, German; *de ruigpoot Buizerd*, Dutch; *Laadenbenet Musevaage*, Danish; *Fjeldvaag*, *Fjeldörn*, Norwegian; *Fjösbent Wråk*, Swedish; *Riekkohaukka*, Finnish; *Koniuch*, Russian.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 29; Kjærb. Orn. Dan. taf. iv.; Fritsch, Vög. Eur. taf. 5. fig. 9; Naumann, Vög. Deutschl. taf. 34; Sundevall, Svensk. Fogl. pl. 27. fig. 5; Gould, B. of Eur. pl. 15; id. B. of G. B. i. pl. 8; Schlegel, Vog. Nederl. pls. 33, 34; Susemihl, Vög. Eur. taf. 34; Levaill. *l. c.*

♀ *ad.* fronte albâ nigro striatâ; pileo et nuchâ lutescenti-albidis fusco striatis et notatis: corpore suprà saturatè fusco, albido et pallidè ferrugineo notato: uropygio fere omnino fusco immaculato: remigibus in pogonio externo et in pogonii interni parte apicali nigris, in parte basali fere omnino albis, primariis extùs griseo lavatis, et secundariis griseo-fusco fasciatis: supracaudalibus albis fusco fasciatis et vix ferrugineo tinctis: caudâ ad basin albâ et in parte apicali saturatè griseâ ferrugineo tinctâ, et fasciis quinque notatis, fasciâ subapicali magnâ, reliquis angustioribus: gulâ et gutture nigro-fuscis albido vix notatis: gutture imo, pectore et colli lateribus fuscis, albido et pallidè ferrugineo notatis: fasciâ in pectore imo ochrascenti-albidâ fere immaculatâ: corpore reliquo subtùs, tibiæ et tarsi plumis ferrugineo-albidis conspicuè nigro-fusco fasciatis: subcaudalibus albis vix fusco notatis: rostro nigro-corneo, ad basin cæruleo: cerâ et pedibus luteis, unguibus nigris: iride fuscâ.

Juv. capite et nuchâ pallidioribus: corpore suprà saturatiore et minùs ferrugineo et albido notato: caudâ ad

basin albâ immaculatâ: capitis et colli lateribus, gutture et pectore lutescenti-albidis nigro-fusco striatis: abdomine saturatè chocolatino-fusco: tibiæ et tarsi plumis lutescenti-albidis vix ferrugineo tinctis et nigro-fusco striatis: subcaudalibus albis fere immaculatis.

♂ feminæ similis sed minor.

Old Female (Halle, Saxony, October). Forehead white, striated with black; crown and nape creamy white, densely striped and blotched with dark brown, the feathers being of this latter colour and margined with creamy white, and slightly varied with rusty red; upper parts very dark brown, varied, blotched, and, to some extent, thickly barred with dull creamy white and light rusty rufous, the back more and the outer wing-coverts less marked and blotched; rump and lower back almost uniform dark brown; upper tail-coverts barred with white and slightly tinged with rufous; quills on the outer web and terminal portion below the emargination black, the primaries externally tinged with grey, the secondaries broadly barred with greyish brown; on the inner web the quills are, except close to the shaft, nearly uniform white, looking quite white on the undersurface of the wing; tail white, except towards the tip, where it becomes greyish, tinged with rufous, and crossed by four distinct and one very indistinct, besides one very broad subterminal blackish brown band; sides of the face black, slightly marked with white; a broad white stripe below the eye; throat and chin blackish brown varied with white; sides of the neck, lower throat, and upper breast dark brown, slightly varied with light rufous and creamy white, the sides of the neck being lighter in colour and more varied with rufous; a band on the lower breast creamy white, very sparingly barred with blackish brown, rest of the underparts with the feathers on the legs down to the feet white, tinged with rufous, and boldly barred with blackish brown; the legs much more deeply tinged with rufous than the rest of the underparts, and more closely barred; under tail-coverts sparingly barred; under wing-coverts white varied with blackish brown; bill blackish horn, bluish at the base; iris brown; feet yellow; claws black; cere yellow. Total length about 23 inches, culmen 1·4, wing 16·9, tail 9·5, tarsus 2·8.

Young Female (Wangford, near Brandon). Head and nape lighter, the feathers with broader light edges than in the old bird; upper parts deeper brown and more uniform, being but slightly varied with lighter colours; wings as in the adult, but duller; tail white, unbarred on the basal two thirds, dark dull grey on the terminal third, with one broad subterminal and two indistinct smaller bands of blackish brown; sides of the head and neck, throat, and breast white with a warm creamy tinge, broadly striped with blackish brown; rest of the underparts to the vent deep brown with a chocolate tinge, almost uniform, forming a very broad distinct band on the lower part of the body; feathers on the tibia and tarsus creamy white with a rufous tinge, striped with blackish brown; under tail-coverts white, slightly marked with blackish brown.

Obs. The sexes differ only in size, the male being somewhat less than the female.

As regards the variations in plumage, these, as is the case with all the Buzzards, are so great that it is impossible to give a description of all the stages and variations of plumage. The nestlings before they attain their feathers are covered with white down. The autumn dress of the young bird is as above described; and, as in most of the true Falcons, the plumage of the young bird may be distinguished by the underparts being striped, whereas they are barred in the adult. The very characteristic broad band on the abdomen is also a sign of immature dress. The young bird above described is, perhaps, the youngest in my series. A specimen from Southern Russia has the head and neck much whiter, the upper parts varied with white, the breast whiter and somewhat blotched and not altogether striped with dark brown; the band on the abdomen is smaller; and there are signs of bars on the thighs and legs; but the basal portion of the tail is unbarred. No. 3, from South Russia, is very much

whiter, the head, neck, and breast being white with dark striations, the feathers on the upper parts with very broad white margins, the underparts very white, and the band on the abdomen very narrow, the thighs and tarsi yellowish white with small blotchy stripes. No. 4, from Silesia, has the upper parts darker than in the young bird (no. 1), but intermixed with ferruginous; the throat and breast are very dark and heavily blotched (not striped) with blackish brown; the band on the abdomen is very broad and clearly defined; but the thighs and tarsi are very distinctly barred, though the basal portion of the tail is quite plain white; the terminal portion of the tail is tinged with rufous, the extreme tip being, however, nearly pure white. The next in succession (no. 5) is a female from Falsterbo in Sweden, which is adult, but not old. It has the band on the breast less clearly defined than in no. 4, but is rather more rufous, and is not quite so dark in general coloration. The next in succession is, I take it, the very old bird above described, which makes no. 6 in the series. The variations in size in the females is as follows—wing 16·5–18·0 inches, tail 9·5–10·0, tarsus 2·9–3·1; and the old male I possess measures—wing 16·2 inches, tail 9·5, tarsus 2·95.

Essentially a northern species, the Rough-legged Buzzard inhabits during the summer season the northern portions of Europe and Asia, migrating down into Central and even occasionally Southern Asia and Europe during the winter. In North America it is replaced by an allied species (*Archibuteo sancti-johannis*), which, in adult plumage, is a much darker bird, being not unfrequently almost black.

With us in Great Britain the present species is chiefly known as a somewhat rare straggler, being met with, however, annually in the autumn or winter, almost always in immature plumage; for I have never seen a British-killed example in the plumage of the old bird. It has been killed in almost every county in England, and has even been known to breed with us. Mr. A. G. More gives (Ibis, 1865, p. 12) the following particulars communicated to him by Mr. Alwin S. Bell, of Scarborough, viz.:—"Mr. John Smith, who was gamekeeper for twenty years on the estate of Sir J. V. B. Johnstone, remembers the Rough-legged Buzzards perfectly well: there was no mistake as to the species, as they were feathered right down to the toe-ends. They used to breed year after year, on the ground, amongst the heather, in the moor dells near Ash-Hay Gill, Whisperdale, about three miles from Hackness. One pair only bred every year during most of the time that Mr. Smith was keeper (twenty-four years ago). They were not seen except in the breeding-season."

In the southern counties it appears to occur less frequently than on the east coast. Mr. J. C. Mansel-Pleydell says that it is "a rare bird in Dorsetshire; one was shot about 1862 in the neighbourhood of Rempston, where it is now preserved. Mr. Hart, of Christchurch, stuffed a Dorsetshire specimen in the year 1857. Two have passed through the hands of Mr. Rolls, of Weymouth, one of which was shot at Creech Grange. The late Mr. C. Bartlett has two in his collection which were shot in the neighbourhood of Blanford; and the Rev. O. P. Cambridge saw one at Bloxworth in the year 1862." Mr. Cecil Smith informs me that it only occasionally visits Somersetshire, and is never very common. On the east coast it appears to be more frequently met with than in the southern and western counties. Mr. Stevenson writes (B. of Norf. i. p. 30) as follows:—"These Buzzards vary considerably in numbers in different seasons, being in some years very scarce, and in others visiting us in great quantities, as was particularly the case in the winter of 1839–40, when, according to Messrs. Gurney and Fisher, 'during the three months of November, December, and January no less than forty-seven specimens were

ascertained to have been taken within eight miles of the town of Thetford, besides many others which were procured elsewhere.' Since that date but few had been observed from year to year until the autumn of 1858, when they were again numerous; and between October and January of the following year about twenty specimens were obtained, principally in the neighbourhood of Thetford and Yarmouth." Mr. Stevenson remarks on the extreme rarity of adult birds, and says that he only knows of four in mature dress. One of these, obtained by Mr. Thomas Dix, on Thetford Warren, in November 1857, was left to him by that gentleman; and he informs me that it closely resembles old birds in the Norwich Museum collected by Wolley in Lapland.

Mr. A. Clapham, of Scarborough, informs me that he possesses a very fine pair shot on the cliff of Mill Bay, Scarborough; and Mr. Cordeaux says that Mr. Boulton has had several specimens captured in Holderness. In Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 47), "it is not common on the west side, only a very few examples having come under my observation; but on the east coast it sometimes appears in considerable numbers in autumn, when moving in migratory flocks. At Dunbar, for example, twenty or thirty specimens were obtained by different collectors in 1840–42. I had an opportunity of examining many of these at the time. This species has since that year occurred in the same district, not perhaps so plentifully, but still numerously enough to attract attention." As I was penning the present article I heard of the capture of several specimens in Scotland. Lord Walden informs me that he obtained two, and heard of several more having been secured; and Mr. J. J. Dalgleish writes to me that he has ascertained that at least seventeen were killed in the midland district of Scotland during the last six weeks, three of which passed through the hands of a local bird-stuffer.

In Ireland it is, Thompson says, an extremely rare visitant; and I do not find it recorded from Greenland, Iceland, or the Færoes; but it is common in Scandinavia. Mr. Collett says that it breeds commonly in Norway in the fells above the tree-region, especially above the arctic circle, on the islands as well as on inland heights. It is common on the Dovre and the Langfjeld and their branch ranges, down to Valders and the Thelemarksfjelds (in 59½° N. lat.). Pastor Sommerfelt states that it is a resident on the Varanger fiord; for Mr. Nordvi has seen it at Mortensnæs in the winter. In 1853 he found it common at Nyborg in April, the ground being then covered with snow. In Southern Norway it is only met with during passage; and the same may be said as regards its occurrence in Southern Sweden; but Nilsson says that it occasionally remains through the winter. Von Wright states (Finl. Fogl. p. 37) that, excepting in the extreme north, it is rare in Finland; and I may add that I never met with it during the time I was in that country. In Russia it is common in the northern Governments; and Mr. Sabanäeff found it in the Ural on the steppes in the district of Shadrinsk, where it probably breeds, and whence it migrates to the south-eastern part of the district of Ekaterinbourg; and he further states that it is met with in the woodless parts of the Northern Ural. In November it occurs near Moscow on its migration southward, but is not often met with in the spring. Sabanäeff states that it breeds in the north-eastern part of the Government of Jaroslaf; and, according to Meshanoff, it also breeds in the Vologda Government; and the naturalist Miasnikoff says that it is numerous in the Government of Tula during the winter season, and also breeds there. Professor Bogdanoff is of opinion that it may possibly breed in the districts

of Scizralsk and Belebleff; but it has only been observed during migration in the Government of Voronege. It is possible, however, that the Booted Eagle may have been in some instances mistaken for the present species. In Germany the Rough-legged Buzzard is a winter visitant, and, according to Borggreve, visits the eastern and central districts regularly, appearing with less regularity in the western portion. It is also stated to have bred in Germany. Mr. A. von Homeyer writes (J. f. O. 1859, p. 52) that "Mr. F. D. Heynemann obtained eggs from the Taunus; the female, shot from the nest, left no doubt as to its being really that of a Rough-legged Buzzard;" and Mr. Wiese says (J. f. O. 1867, p. 82) that "Mr. Schultz, of the Pomeranian Fusiliers, a reliable man, shot some years previously, in a forest in the Wackrow district, close to the Greifswald, a Rough-legged Buzzard as it flew off its nest, which latter contained one egg."

Kjærbölling says that it only visits Denmark during passage in September and October, and again in March and April, a few remaining throughout the winter. It has, he adds, been stated to have nested in Jutland. In Holland it is a winter visitant; Mr. Labouchere informs me that it frequents the sand dunes, where it is rather numerous in some seasons. It is said to be rare in Belgium, where it appears in November, and remains during a portion of the winter; and it visits Luxemburg during passage. In France it appears to be of irregular occurrence on migration, and in the south it is very rare. Mr. Howard Saunders informs me that there are no specimens in the Perpignan Museum, and only two instances of its capture near Toulouse are on record—both in very severe winters. He has also seen a specimen obtained at Bagnières de Bigorre. It is doubtful if it has occurred in Portugal; and there is no authentic instance of its capture in Spain. It is now well known that the *Buteo lagopus* of Machado and other Spanish naturalists is nothing but the Booted Eagle. It is but rarely found south of the Alps; three occurrences are on record in the Veronese, and three in the Modenese districts, one in that of Rome, one in Sardinia, and one, many years ago, near Syracuse, in Sicily. Mr. C. A. Wright writes respecting its reputed occurrence in Malta (Ibis, 1869, p. 245) as follows:—"I find in Dr. Gulia's 'Repertorio di Storia Naturale' of Malta the following notice of the occurrence of this species here:—'In 1843, it was recognized by Professors Zerafa and G. Delicata. In 1859, I saw an individual which was killed at Zurrico.'" It does not appear to have been observed by any of the Greek ornithologists in Greece; but I possess a specimen sent to me (unlabelled) in an Albanian collection. It visits Southern Germany during winter, and is, Dr. A. Fritsch states, sometimes very numerous in Bohemia. The late Mr. E. Seidensacher told me that stragglers appear in winter in Styria, and remain about the same place. In very severe winters it is more common.

Messrs. Elwes and Buckley say (Ibis, 1870, p. 72) that it is "occasionally found near Constantinople in winter. It has been killed by Mr. Robson, and it is also contained in M. Alléon's collection." In Southern Russia, Professor von Nordmann says, he never observed it during the summer; but in winter it was very abundant from November onwards, increasing up to January. When the frosts are very severe they migrate further southwards; but as soon as the snows melt and the rodents begin to come out of their holes, they return: their principal food is *Arvicola arvalis*. One very severe winter he found one devouring a Short-eared Owl. It has never been met with south of the Mediterranean; but to the eastward it is found into Siberia, and is even

stated by Père David to occur in North China: but this must, I think, be a mistake, or he has confused *Archibuteo strophiatus* (Hodg.) with the present species. Dr. Severtzoff gives me the following note respecting its range in the portions of Eastern Russia visited by him:—"This bird arrives in November in the Voronege Government, and feeds on mice on the borders of the steppe and forest, and near the farm outhouses. It may frequently be seen circling over the villages like a Kite, but is not so destructive to the poultry as that species. It leaves for the north in March. During its sojourn with us in the winter it roosts on large trees, but at no great altitude from the ground, and usually on such as are in the interior of the forests. On the Ural river, from Orsk and Orenburg to Guriew, it is found during the day-time hunting after food on the steppes, but roosting in the forests as far as these occur, or, say, to about fifty miles north of Guriew, along the banks of the river. It is said to breed near Orenburg, in the ravines on the steppes; but I suspect that *Buteo ferox* has been mistaken for the present species, for that species really does breed there in the ravines. Throughout the Kirghis steppes I only met with *Archibuteo lagopus* in winter, in the most open, treeless localities; and there it perches on the mosque-like clay-built Kirghis tombs. On the Syr Darja, during the severe winters of 1857–58, the present species was seen attacking the half-starved Pheasants (*Ph. mongolicus*). It winters in the steppes of Russian Turkestan, all along the northern portion to the foot of the Thian-shan." It is recorded from Siberia by Von Middendorff, who states that it arrives on the Boganida before any of the other birds of prey, the first being observed on the 15th May.

In habits the Rough-legged Buzzard much resembles the common Buzzard. It is a sluggish somewhat heavy-looking bird; but on the wing, though slow, it is by no means clumsy, and often glides for long with extended wings, and evidently without any great exertion. So far as I can ascertain, it appears to be somewhat less of a forest-bird than the common Buzzard; but it breeds in trees, though not in the dense forests, but rather on the outskirts of the woods, or in straggling trees in the mountains. Its cry resembles the clear, loud, mewing call of the common Buzzard, but is rather higher in tone. It utters its call-note frequently, usually when on the wing circling high up in the air. During the day it hunts after food in the open portions of the country; but it resorts to some wood or grove for the night, and roosts on a tolerably large tree, resorting night after night to the same place, if left unmolested, at least as long as it remains in that part of the country. It feeds on small mammals of various kinds, such as field-mice, lemmings, moles, frogs, lizards, and, it is said, also insects. It seldom preys on birds, unless it captures a disabled or sickly one; but it is said to occasionally take a young hare, and to follow the Goshawk and deprive it of its prey. It frequently hovers for a short time over its prey before it pounces on it, and often sits on some elevated perch where it can keep a good look-out for prey. When pressed by hunger it will feed on carrion, but scarcely otherwise. As a rule, it is rather a shy bird and difficult of approach; but when one can discover where it retires to roost, it is not difficult to shoot it by lying in ambush to await its arrival at sun-down; or it may be shot by the light of the moon. Trees where birds of prey roost may be discovered by looking out on the ground for the white excrement, which is generally freely scattered around.

It breeds in the north of Europe, and only in exceptional cases in the northern portions of Central Europe. The late Mr. John Wolley found it breeding numerously in Lapland; and most careful details respecting the nests taken by or the eggs brought to him are published by

Professor Newton in the 'Ootheca Wolleyana'—which tend to show that the nest is always placed in a tree, at various heights, though usually about 20 feet, and that the number of eggs deposited varies from three to five, four being the usual complement. The dates when the eggs were taken vary between the 14th May and the 23rd June. I am indebted to Messrs. Harvie-Brown and Alston, who found the present species breeding in Norway in 1871, for the following notes, viz.:—

"This species breeds not uncommonly on the higher fjelds of Norway, but is more abundant in some seasons than others, being most plentiful in 'lemming-years.' It nests generally at an elevation of about 4000 feet above the sea, usually in places difficult of access, but occasionally in very gradually sloping cliffs. All the nests we visited were in very difficult rocks; but old breeding-places were pointed out to us into which a child could easily have walked.

"The nest is composed of branches of dwarf birch (*Betula nana*) or juniper (*Juniperus communis*), lined with thin wiry grass; it is sometimes of considerable size, at others a mere hollow lined with grass and without any sticks. In none did we find any vestige of hair or wool, as is so often the case in the nest of the common Buzzard (*Buteo vulgaris*) in Scotland.

"The eggs are from two to five in number. Four was the greatest number obtained by us from one nest; but from information received from the natives we learned that five were not unusually found. They vary in the amount and distribution of colour, as do those of the common Buzzard. One pair of eggs obtained by us are abnormal in shape, being much elongated, and pointed at both ends. The length of the most aberrant of these two eggs is 2·31 inches, and the breadth 1·43. The dimensions of a typical specimen are—length 2·125 inches, and breadth 1·74. These abnormal eggs have few colour-markings, but were fertile. Eggs considerably incubated were taken on 22nd June, and others quite fresh on 27th June; and we have since received others taken as late as the 10th September. These late eggs, however, have no colour-markings whatever, and were without doubt a second or third laying.

"The birds at the nest had habits very similar to those of the common Buzzard as observed by us in Scotland. At one breeding-place visited by us the female, after having left the nest, returned and again took her place. We then hurled down rocks and loose earth from above, and one of our men actually fired a charge of shot and a bullet through the edge of the nest from below, without succeeding in making her quit her post. After attempts which extended over the space of at least an hour, we had to give it up. The following day, however, she left the nest readily, and was shot. On revisiting the spot a week later, we found that the male had already provided himself with a new mate."

Of the eggs of the present species I possess a tolerably large series, all from Scandinavia, which are marked something like those of the common Buzzard, but appear to be subject to even more variation both in size and markings, some being but scantily marked with dull red, whereas others are very richly blotched with dark red; indeed so great are the variations that it is impossible to give a detailed description of the various eggs before me. As a rule, those in in my collection are more richly marked than eggs of *Buteo vulgaris*, and in size they vary from $2\frac{5}{40}$ by $1\frac{29}{40}$ inch to $2\frac{19}{40}$ by $1\frac{32}{40}$ inch.

The specimens figured are:—on the one Plate a very white young male, no. 3 in the series above described, and an adult but not old female, no. 5 in the series; and on the second Plate

the young female from Wangford (no. 1), and the very old female from Halle (no. 6),—all being in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀. Falsterbo, Sweden, October 1868 (*T. E. Buckley*). *b*, *c*, *juv.* Denmark. *d*, ♀ *juv.* Wangford Hall, near Brandon, Suffolk (*H. E. D.*). *e*, ♀. Silesia. *f*, ♀ *ad.* Halle, Saxony, October (*W. Schlüter*), *g*, ♂ *juv.* Southern Russia, January. *h*, ♀ *jun.* Southern Russia, February (*Schlüter*). *i*, *juv.* Albania? (*Hanbury Barclay*).

E Mus. Howard Saunders.

a, ♀. Volga, February (*Möschler*). *b*, ♂. Falstutis, Sweden, October 18th, 1869 (*T. E. Buckley*). *c*, ♀. Thuringia, April.

E Mus. Norv.

a, ♀ *ad.* Lingwood, Norfolk. *b*. Benacre, Suffolk (*H. Stevenson*). *c*, ♂ *ad.* Nangi, Lapland, May 23rd (*J. Wolley*). *d*, *pull.*, *e*, ♀ *ad.* Torasjärvi, Lapland, July 29th. *f*, ♂ *ad.* Palajoki, Finland, July 3rd, 1853. *g*, ♀. Karesuando, Lapland, June 2nd, 1854 (*J. Wolley*). *h*. Pomerania (*Parzudaki*). *i*. European Turkey (*Leadbeater*).

Genus AQUILA.

Aquila, Brisson, Orn. i. p. 419 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 125 (1766).
Spizaëtus apud Jerdon, Madr. Journ. x. p. 75 (1839).
Butaëtus apud Blyth, Journ. As. Soc. Beng. xiv. p. 174 (1845).
Hiraëtus apud Kaup, Mus. Senck. iii. p. 260 (1845).
Gydaëtes apud L. Brehm, Allg. deutsch. natur. Zeit. i. p. 48.
Nisaëtus apud Sharpe, Cat. Accipt. Brit. Mus. p. 253 (1874).

This genus contains twelve species, eight of which are found in the Western Palæarctic Region, the genus being represented in the Palæarctic, Ethiopian, Oriental, and Nearctic Regions.

The Eagles are powerful birds, somewhat heavy and slow like the Buzzards, but fierce and well able to capture their prey by pouncing on it. They inhabit mountainous regions, as well as large open plains and wooded localities, and may be seen sailing in circles at great altitudes, as well as flying near the ground in search of food. They feed on mammals, birds, and occasionally on carrion, though as a rule they capture their prey by pouncing on it. Their cry is a loud yelp uttered several times in succession. Their nests are placed on a cliff, tree, or on the ground, and are bulky, being constructed of twigs and branches and lined with grass, fur, wool, or any available soft material. Their eggs, which are usually deposited early in the season, vary a good deal, some being pale bluish-white, unspotted, whereas others are blotched and marked with violet-grey and rich dark red.

Aquila chrysaëtus, the type of the genus, has the beak strong, moderately long, curved from the cere, acute, the cutting-edges nearly straight; nostrils oval, lateral, oblique; wings long, broad, the first quill short, being about as long as the secondaries, the fourth or fifth the longest; tail rather long, nearly even or slightly rounded; legs strong, the tarsus feathered to the base of the toes; the last phalanx of each toe covered by three large scales; claws strong, curved, acute.



BOOTED EAGLE..

Nesting Plumage

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BOOTED EAGLE.

AQUILA PENNATA.

AQUILA PENNATA.

(BOOTED EAGLE.)

Le Faucon patu, Brisson, Orn. vi. App. p. 22, pl. 1 (1760).
Falco pennatus, Gm. Syst. Nat. i. p. 272 (1788).
Aquila pennata, Vig. Zool. Journ. i. p. 337 (1824).
Aquila minuta, C. L. Brehm, Vög. Deutschl. p. 29, pl. 2. fig. 2 (1831).
Spizaetus milvoides, Jerd. Madr. Journ. x. p. 75 (1839).
Butaetus pennatus (Gm.), Blyth, J. A. S. B. xiv. p. 174 (1845).
Hiraetus pennatus (Gm.), Kaup, Mus. Senckenb. iii. p. 260 (1845).
Aquila brehmii, Müll. Naumannia, iv. p. 24, 1851.
Aquila longicaudata, Heugl. Syst. Uebers. p. 6 (1856).
Aquila gymnopus, Heugl. tom. cit. p. 6 (1856).
Aquila maculati-rostris, L. Brehm, Allg. Deutsch. Natur. Zeit. p. 46 (1856).
Aquila nudipes, L. Brehm, tom. cit. p. 48 (1856, ex Susemihl).
Gydäetes nudipes, L. Brehm, tom. cit. p. 48 (1856).
Aquila albipectus, Severtzoff, Turk. Jevotnie, pp. 63, 112 (1873).
Nisaetus pennatus (Gm.), Sharpe, Cat. B. Brit. Mus. i. *Accipitres*, p. 253 (1874).

Aigle botté, French; *Aguilucho*, *Aguila calzada*, Spanish; *Aquila minore*, Italian; *Zwergadler*, German.

Figuræ notabiles.

Temminck, Pl. Col. 33; Werner, Atlas, *Rapaces*, pl. xix.; Naumann, Vög. Deutschl. taf. 343; Gould, B. of Eur. pl. 9; Susemihl, Vög. Eur. taf. 22, 23.

♂ *ad.* fronte albidâ: pileo et nuchâ pallidè arenaceis nigro-fusco striatis, hâc rufescente lavatâ: corpore suprà brunneo, scapularibus pallidioribus et grisescente arenaceo immixtis: supracaudalibus nonnullis dorso concoloribus, reliquis albicanti-cervinis pallidè rufescente brunneo notatis: remigibus nigro-fuscis, primariis intimis et secundariis brunnescenti-albido apicatis, secundariis nonnullis intimis pallidè brunneis medialiter saturatioribus: tectricibus alarum superioribus brunneis pallidiore marginatis: rectricibus saturatè fuscis, vix albicante cervino apicatis, rectricibus externis indistinctè maculis nigro-fuscis fasciatis: capitis et colli lateribus pallidè rufescenti-brunneis, nigro-fusco striatis, regione paroticâ saturatiore: gulâ, gutture et corpore subtùs cum subcaudalibus et tectricibus alarum inferioribus albis: pectore, hypochondriis et tectricibus alarum inferioribus vix rufescente brunneo striatis: pedibus plumis albis indutis: rostro ad basin cærulescente, ad apicem nigro, cerâ pallidè flavâ: iride grisescenti-corylinâ.

♀ *ad.* mari similis, sed corpore suprà saturatiore, pileo et nuchâ rufescentioribus: corpore subtùs pallidè flavicanti-cervino, pectore vix rufescente lavato et conspicuè striato.

♀ *juv.* adulto similis sed saturatior, corpore subtùs ubique rufescenti-brunneo, tectricibus alarum inferioribus sordidè fuscis nec albidis.

Adult Male (Seville). Forehead white; crown creamy sand-colour, streaked with dark brown; nape similarly coloured, but washed with rufous; centre of the back and rump dark earth-brown, with a faint metallic gloss, scapulars lighter and varied with sandy grey; quills dark blackish brown, innermost primaries and the secondaries tipped with light whitish brown, some of the inner secondaries light earth-brown with darker centres; larger wing-coverts dark brown, tipped with light sandy brown, median coverts dark brown, varied with light sandy brown, all the feathers having darker centres; lesser wing-coverts like the back, but most of the feathers with paler edges; some of the upper tail-coverts dark brown, and the remainder, which are those next to the tail, creamy white, marked in the centre, or on one web with dull reddish brown; tail dark brown, narrowly tipped with creamy white, several of the outer rectrices with two or three obsolete dark markings across the feathers; sides of the head and neck pale reddish brown, with dark brown central streaks, the auriculars much darker than the rest; entire underparts, including the under wing- and under tail-coverts, white; the breast slightly streaked with narrow dark reddish brown stripes, which are to a very slight extent present on the flanks and under wing-coverts; legs covered down to the feet with white feathers; beak light bluish at the base, black at the tip; cere wax-yellow; iris light hazel; feet light wax-yellow; claws black. Total length 18 inches, culmen 1·5, gape 1·4, wing 14·0, tail 8·5, tarsus 2·6.

Adult Female (Castellejo, Spain, 14th May, shot off the nest). Resembles the male, but has the upper parts darker, the head darker, and more rufous, the forehead whitish, streaked with dark brown; underparts pale yellowish buff on the breast, and throat washed with rufous, and much more broadly streaked than the male. Culmen 1·65, gape 1·5, wing 15·9, tail 9·0, tarsus 2·8.

Obs. A female from Turkey precisely resembles the male above described.

Young Female (New Castile, May). Resembles the bird last described, but has the entire underparts reddish brown; the under wing-coverts dark brown.

Obs. Like the Buzzard the present species differs greatly in shade of colour; and one specimen, a male, from near Constantinople, in the collection of Captain Elwes, has the upper parts much darker than any of the specimens above described, in most portions of the plumage almost blackish brown, and the underparts are also dark brown. That this stage of plumage is not confined to either sex is clear from the fact that both males and females are found in this dark dress; and that it is not necessarily the immature dress is clearly proved by the fact that Mr. Howard Saunders possesses two nestlings taken out of the same nest, which in general character of plumage resemble the adult bird, but one is very light and the other is very dark. The old female bird obtained from this nest, and doubtless the parent of these two birds, is dark brown like the male bird in Captain Elwes's collection; and I have deemed it necessary to give a figure of these three birds, the two nestlings being in the foreground, and the female in the background on the wing.

Besides the above dark male in Captain Elwes's collection, I have one, a very bad specimen, a male shot in Turkestan by Mr. Severtzoff, which is also almost uniform blackish brown, with a chocolate tinge. That these dark and light birds interbreed promiscuously is shown by Mr. Goebel and Mr. L. Holtz, as well as by Mr. Howard Saunders. The white shoulder-spot, so often referred to by various authors, is not clearly defined in any of the European specimens I have examined, being only indicated in one, and appears to be rather uncommon; but Mr. L. Holtz describes it as being fully defined in some specimens he has obtained or examined from Southern Russia; and Naumann figures it with the underparts reddish brown, and the shoulder-patch very strongly developed, and states that the specimen figured is a young male.

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This, the smallest and most Buzzard-like of all the European Eagles, inhabits Southern Europe, Africa, extending eastward to India and Ceylon. In Europe it is most common in the extreme south-western and the extreme south-eastern districts—that is, in Spain and Turkey. It has not occurred in Northern Europe or the British Isles, and is only an occasional visitant to Central Europe. According to Borggreve (Vogelf. von Nord-Deutschl. p. 58) it has occurred once in Lausitz; and three specimens are said by Schlegel to have been obtained near Munich. It is said by Degland and Gerbe (Orn. Eur. i. p. 37) to have been "observed in France, in the departments of Maine-et-Loire, the Seine, l'Aube, l'Orne, Loir-et-Cher, la Sarthe, Mayenne, Loire, and the Hautes- and Basses-Pyrénées, but nowhere numerous. It nests in Champagne, in Eastern France, where Mr. J. Ray has several times taken its eggs." It is also found in Provence, but is there rare; and I may add that Mr. J. H. Gurney informs me that there is an adult male in the Norwich Museum which was shot from its nest in Bar le Duc, France. Professor Barboza du Bocage records it from Portugal; and the Rev. A. C. Smith states (Ibis, 1868, p. 435) that "it is said to be common throughout that country." In Spain, according to Lord Lilford, Col. Irby, and Mr. Howard Saunders, it is common during the summer season; and Lord Lilford, who in 1866 published some excellent notes respecting the habits and nidification of this Eagle, writes to me as follows:—"Since writing about this species and its habits in Central Spain in 'The Ibis,' I have formed a very intimate acquaintance with it in a very different part of that country, viz. the Coto de Doñana, in May 1872, in which district we found no less than sixteen nests of the Booted Eagle containing one or two eggs each. After the Black Kite (*Milvus migrans*) this species is, I think, the most common raptorial bird of the Coto, at all events in the pine-covered parts thereof." He further says in his notes in 'The Ibis' that it arrives in Spain late in April. Colonel Irby informs me that many pairs nest in the cork-wood near Gibraltar, but that he never observed it in the winter season; and Mr. Howard Saunders states (Ibis, 1871, p. 62) that it "is more abundant in the Castiles than in Andalucia." Though so common in Spain, it is of extremely rare occurrence in Italy; and Salvadori (Fauna d'Ital. ii. p. 8) records only four instances of its having been met with in that country, viz.:—one referred to by Bonaparte as having been obtained near Sienna; Durazzo speaks of a second as having been obtained at Chambéry; a third was obtained near Genoa in October 1863; and a fourth was shot near Turin many years ago. In Greece it is recorded by Von der Mühle as rare; but Dr. Krüper met with it breeding in Macedonia, and gives (J. f. O. 1872, pp. 59–64) many details respecting its nidification and habits. In Southern Germany it is tolerably rare. Dr. Anton Fritsch does not include it in his list of the birds of Bohemia; but the Ritter von Tschusi-Schmidhofen informs me that "it has frequently been obtained in Lower Austria; and there are specimens in the Vienna Museum, as well as in many other, private collections. According to Von Hüber it is occasionally seen in Kärnthen; and Fiedler speaks of it as being common in Sclavonia, but rarer in Croatia. Baldamus observed a pair at Orsova; and other naturalists have seen it in Southern Hungary and Siebenbürgen. Stetter found it in a valley in the mountains near Rodna; A. von Buda shot one near Hálszeg about 1840; and Count Lázár observed it at Broos, where he obtained the young birds. In Galicia it is common; and Count Wodzicki and Schauer shot many and obtained eggs and young birds." I myself found it not uncommon on the Lower Danube, and frequently saw it in Servia, Wallachia, and Bulgaria.

Messrs. Elwes and Buckley say (Ibis, 1870, p. 69) that they "never observed this species in Macedonia or Greece, though it is probably found in the wooded parts of the country; but in the east of Turkey it is not uncommon, and breeds regularly near Constantinople. M. Alléon has three times taken the nest in the forest of Belgrade, and was kind enough to present us with some of the eggs, which are exactly like specimens from Spain. He informs us that it passes in immense flocks over the Bosphorus from Asia into Europe about the middle of April, and is easily shot, both in the adult and immature brown plumage, by waiting on the tops of the hills near Buyukdere. We saw this bird in the forest near Babadagh, and were told it bred there, also near Pravidy." In Southern Russia it breeds commonly; and copious notes are given on its breeding-habits by Mr. Ludwig Holtz (J. f. O. 1872, pp. 286–305) and Mr. H. Goebel (*tom. cit.* pp. 454–463) as observed by them in the Uman district. Von Nordmann records it from Bessarabia; and Mr. Sabanäeff informs me that he observed it in the Ural Mountains, and considers that it is found up to about 57° N. lat.; and he met with it in the Kaslinsky and Keshtemsky Dachas, and in the birch-woods on the western slopes of the Ural, but everywhere rare. By some sportsmen it is there called "Teternik," as it often attacks and pursues the Blackgame ("Teterew"), although unable to catch or kill them. He further says that Mr. Severtzoff states that it occurs in the Government of Tver. I have no data respecting its range in Asia Minor, where it doubtless occurs; and Canon Tristram, writing on the ornithology of Palestine, says (Ibis, 1865, p. 252) that "it is by no means common, and is confined, so far as our observation goes, to the northern part of the country. We observed it in November near Beyrout, and saw it frequently in the hill country beyond Sidon and Tyre during the following months. Mr. Upcher shot one in the Lebanon in March; but we never obtained its nest. It perches on trees rather than rocks." In North-eastern Africa it is, according to Captain Shelley (B. of Egypt, p. 207), "plentiful at times in Egypt and Nubia. It arrives about March to breed, and leaves again in September. It appears to be rather uncertain in its visits; for I never met with it during my last two tours in the country; but in March 1868, near Benisouef, our party killed three, and we saw several others either among the clumps of sont trees or beating up and down the fields, which were at that time full of Quail." And Dr. Th. von Heuglin (Vög. N.O.-Afr. p. 6) says that "it is common from March to October in the date-woods of the so-called 'Scherkieh' and in Lower Egypt generally." During migration he observed it along the Nile to 14° N. lat. It is not very common in North-western Africa, and is found as far south as the Cape of Good Hope. Loche speaks of it as being rare in Algeria, where, however, it breeds. Mr. O. Salvin says (Ibis, 1859, p. 182), "I observed a pair of these Eagles about the rock of 'Gala el Hamara;' but though I kept a sharp look-out for the nest, I never could discover it. About Djebel Dekma I more than once saw the Booted Eagle; and indeed during our whole stay in the Souk-Harras district birds of this species were occasionally observed." Mr. L. Taczanowski says (J. f. O. 1871, p. 61) that "it was several times seen in December near the Lake Fezzara, and at the end of January near Batna and Bouarif. This species winters in Algeria, but not in large numbers;" and, according to Mr. C. F. Tyrwhitt Drake (Ibis, 1867, p. 424), it has been seen on a few occasions at Tetuan and Tangier. Mr. Gurney (B. of Damara Land, p. 7) says that Mr. Andersson's last collection contained a specimen obtained in Ondonga, Ovampo Land, on the 14th November, 1866; and Mr. Layard (B. of S. Afr. p. 10) writes that

"Le Vaillant found this species only in the forests of Outeniqua Land, perching on the summits of high trees, and shy and difficult of approach. Dr. Smith cites it as from near 'Heeren Logement,' in Clanwilliam;" and he further states (Ibis, 1869, p. 361) that he "obtained this pretty little Eagle in the neighbourhood of Saldanha Bay, on the west coast. A kind friend residing in the vicinity has collected an extensive series of eggs for me; and as the locality is a very favourable one, his name will often appear in these notes. Mr. J. Cotzé, jun., aided by his children and his neighbour Mr. Melk, procured several nests of this bird. They were placed in trees, very similar to those of *Buteo jackal*; the eggs, generally two, of a dirty white ground, more or less blotched and smeared with light reddish brown; axis 2″ 5‴, diameter 1″ 10‴. My son, Mr. Leopold Layard, also found a nest with a pair of eggs at Grootevadersbosch, near Swellendam." Dr. Sclater also records it (Ibis, 1864, p. 303) as having been obtained by the late Dr. Dickinson at Chibisa, in the Zambesi district.

To the eastward the Booted Eagle occurs as far as India and Ceylon. Severtzoff (Turk. Jevotnie, p. 63) records it as found throughout Turkestan, except in the south-western portion, where it does not occur. It breeds principally on the Thian-Shan and Karatau Mountains; and its nest has been found as high as 7000 feet; but above that it only occurs during migration. Dr. Jerdon (B. of I. i. p. 64) speaks of it as being found throughout India, where it frequents groves, gardens, and cultivated land; and Mr. Hume says that he has shot it in the Goorgaon district, and near Umritsur, in the Punjaub, that Mr. W. E. Brooks has seen several at a time near Chunar in company with *Milvus govinda*, and that Mr. R. Thompson met with it commonly in Gurhwal and Kumaon. It has also, according to Mr. Holdsworth (P. Z. S. 1872, p. 411), "been recorded by Layard from Ceylon." The Australian Little Eagle (*Aquila morphnoides*, Gould) has been confounded with the present species, but is clearly distinct; and my late colleague Mr. Sharpe points out (Cat. of Accip. p. 255) that it may always be distinguished by the under surface of the wings being mottled, not plain-coloured, as is the case with *A. pennata*.

In its habits the Booted Eagle somewhat resembles the Buzzard, and, like that species, it feeds on small birds, pigeons, and small mammals; but it is not so very swift, and I scarcely think, from what I have seen of it, that it could catch an old pigeon on the wing. Still it flies with grace and ease, and is, when flying, a graceful and elegant bird. Most observers who have studied its habits say that it feeds principally on mice and rats, like the Spotted Eagle; and doubtless, like the Buzzard, it frequently kills young birds, especially during the breeding-season when it has young. It does not appear in general to be a shy bird, and exhibits great affection for its mate and love of its nest, which it will not forsake though driven from it several times in succession, and it frequently remains sitting until the intruder has climbed the tree in which the nest is placed. Its note is a clear *ke*, *ke*, *ke*, which Dr. Krüper not inaptly compares to the note of a Sandpiper; and he says that though the note is so clear in the spring, especially during the pairing-season, still when the young are fledged and follow the parents the note is changed, and the call of the young birds especially is so harsh that one can scarcely recognize the clear summer note in its cry. It breeds numerously in Spain and Southern Russia, selecting the larger forests, and making use of the old nest of some other Raptor, not building its own; and it usually chooses a nest placed in a tolerably large tree not very closely surrounded by others, where it can have a fair view of the surroundings, generally an oak or a white elm,

those I found in Spain being placed on the latter; but Lord Lilford says that those he found were frequently placed on a pine. In 'The Ibis' for 1866 his Lordship gives some details respecting the nidification of this Eagle, and figures the eggs; and he now writes to me as follows:—"We soon became able to distinguish the nests of this bird from those of the Kite, as they are smaller, more compact, and generally, though not always, placed close to the trunk of the tree, just where the first large branches diverge from it. The bird sits very close, and on being scared from the nest almost invariably dashes down to within a foot or two of the ground, often escaping in this manner, on account of the danger of firing with a party of five or six people scattered about the undulating sand-hills of which the greater part of the Coto consists. Every nest contained a few fresh green pine twigs." He also observes that the flight of this Eagle differs much from that of the Buzzard, so that it cannot well be mistaken for it; and he further remarks on its cry, which he says is as unlike the wail of a Buzzard as possible; and I can from my own experience fully confirm these statements. Mr. Howard Saunders (Ibis, 1871, p. 62) says that he "invariably found it nesting in trees, lining its nest with green boughs, generally of the white elm. It is a very fearless bird, sitting remarkably close; and this year a female at which I had had a snap shot, returned to her nest within a quarter of an hour, although Agapo was engaged at a Kite's nest within 150 yards. I was, of course, lying in wait, and easily obtained her on putting her off the nest a second time."

When at Madrid in 1866, I took a trip, in company with Manuel de la Torre, to Castellejo on the 15th May, in order to take the nest of the Booted Eagle, and subsequently published some notes on its nidification, which I may in part reproduce here, as follows:—"Manuel took me to the nest of *Aquila pennata* from which Lord Lilford procured his first eggs of this bird; but as it showed no signs of being tenanted we did not attempt to climb the tree.

"Not far distant from this tree we found a nest of the Black Kite (*Milvus migrans*), from which we scared the bird, and therefore had reason to suppose that it contained something, probably eggs. However, the tree was one which promised such an amount of hard work that neither of us considered a couple of eggs of *Milvus migrans* a sufficient inducement to attempt to climb it. We therefore proceeded to force our way through the rank undergrowth, keeping a good look-out for nests, and before long were rewarded by seeing a large nest which Manuel thought looked like that of a Booted Eagle. I carried only a walking-stick gun, for the benefit of the Warblers, Sparrows, &c.; so Manuel posted himself close to the tree with his gun cocked, and I proceeded to kick the tree by way of giving the tenant of the nest notice to quit. I had not to kick long; for the next moment a large bird flew off the nest and was instantly knocked over by Manuel. It fell into a large bramble brake, into which we had some trouble to penetrate, but on doing so found a splendid female Booted Eagle, which, being only winged, showed fight, and gave us some trouble before we secured it.

"Having secured our bird, we proceeded to examine the tree, which I had to climb, having agreed with Manuel that I should take the first and he the second. The tree was a huge and very high white elm, almost too thick to climb up; and there was not a bough of any sort for a great height from the ground. Not getting much consolation from looking at the tree, I stripped to my shirt and trowsers and proceeded to go up. At first I mounted with great difficulty, the tree being so thick; but making use of the old knots, &c., I managed to get up until I could

clasp the tree with some degree of ease, and was then soon at the first branch. The nest was placed nearly at the end of a stout limb at the top of the tree, and I had to rest several times before I reached it, but on doing so was delighted to find that it contained two eggs. These I carefully packed in a box that I carried fastened behind me to my belt, and, sitting down in the nest itself, proceeded to take notes; for I always make it a rule to take up my pencil and note-book with me.

"The nest was firmly placed between three branches, was built entirely of thin sticks, twigs, and some dead bramble-branches, and was lined to the depth of about 2 inches with fresh green leaves off the tree itself. These must have been plucked that same morning; for some, which I put into my collecting-box, were quite hard and dry in the evening. This puzzled me not a little; for it looks as if the bird relined the nest every morning, as the leaves would not remain fresh over the day. In diameter the nest was two spans and a knuckle ($19\frac{1}{4}$ inches) outside, and just one span ($9\frac{1}{4}$) inside, not much depressed inside, and rather bulkily built. In the foundation of the nest itself were two nests of *Passer hispaniolensis*, neither of which, however, contained eggs, the one being only half finished.

"In the branches close to the Eagle's nest were several more Sparrows' nests; and in a rotten limb a few feet below was a new nest of *Picus minor*, and close to it an old nest of the same bird.

"The eggs of *Aquila pennata*, which now are (with the exception of the nest-stains) pure white, were, when quite fresh, white with a faint greenish tinge. In shape and size they much resemble the eggs of *Astur palumbarius*; but the shell is somewhat more coarse-grained. The above-mentioned eggs were quite fresh, one of them having probably been laid the previous day.

"After walking along the river-side for nearly an hour, and finding three nests of *Milvus migrans* and two of *Milvus regalis*, we saw, in a huge old white elm tree overhanging the river, a nest which Manuel assured me was that of a Booted Eagle, and which he thought probable might contain something. We pelted the nest for some time, but no bird left it; and getting tired of pelting, I at last fired a charge of dust-shot at the nest, with, however, no effect beyond that of driving out several Sparrows, which evidently had nests in its foundation. I therefore concluded that there was no bird on the nest, and proposed that we should search further; but Manuel refused, saying that he thought it worth while to climb up to the nest, it being his turn.

"The tree was so bulky that he could not climb up the trunk; but with my assistance he managed to reach the first branch, which was not far from the ground. Here he was again unable to climb up the trunk, and had to go to the end of a branch, and pulling down the branches above dragged himself up by them. However, to cut matters short, he succeeded after some time in climbing to the limb on which the nest was placed, and then, to my great astonishment, out flew the Eagle, which had sat quiet during the whole time we had pelted and fired at the nest.

"Manuel soon reached the nest, and reported that it contained two eggs, and in structure &c. was similar to the last nest, being also lined with fresh green leaves off the same tree in which the nest was placed, some of which he threw down for me to examine. Just below, in a hollow hole, was a nest of *Strix flammea*; but Manuel could not get at it. The old bird flew out, and I shot it.

"In the foundation of the Eagle's nest were three nests of *Passer hispaniolensis*, one of which contained five, and another six eggs.

"Manuel had great difficulty in descending, and in one place slipped, unfortunately smashing one of the Eagle's eggs in such a manner that we had to throw it away. These eggs were slightly incubated.

"During the whole time that Manuel was in the tree, the Eagles circled round above, far out of shot; but as we were going away the female flew so close that Manuel shot her, which I was sorry for, as I did not wish her to be shot. As it was we did not get her, as she fell into the river and was carried down by the current."

Usually the eggs of the Booted Eagle are white, with a faint greenish tinge, as described above; but occasionally they are marked with colour. Lord Lilford figures an egg marked with dull red in 'The Ibis' for 1866; and I possess one specimen collected by him which is spotted with rusty red at one end. Mr. Goebel also (J. f. O. 1872, pp. 457–459) speaks of having found eggs marked with violet spots. I possess nine eggs of the present species, collected by Lord Lilford and myself in Spain and by Dr. Krüper in Greece, all of which are unspotted, except the one above referred to.

There has of latter years been no small amount of discussion as to whether there are two species of Booted Eagle in Europe, and as to whether the dark and light birds are really the same species. I have most carefully read all that I can find on record on the subject, and am certainly of opinion that there is but one species, to which both the dark and light varieties belong. That the dark plumage is not an indication of immaturity is clearly proved by the fact that Mr. Howard Saunders possesses two nestlings out of the same nest, the one dark and the other light, the parent birds being also dissimilar, the male being light-coloured and the female dark: but I am utterly unable to agree with Mr. Saunders in the conclusion at which he arrives; for he says (Ann. & Mag. Nat. Hist. xiv. p. 137, 1874) that "the male evidently starts from the *nestling* stage with light-coloured underparts, and with a plumage almost identical with his adult livery; whilst the female does not assume the white breast &c. until after one or, perhaps, several moults;" and he previously states that "there is not on record a single instance of a *carefully sexed male* with dark brown underparts." Against this view I may state that there are several instances on record of the male bird having dark brown underparts. Mr. H. Goebel (*l. c.*) states that, of the parent birds belonging to eleven nests he obtained in Southern Russia, four of the males were in the dark blackish brown plumage. Mr. Ludwig Holtz (J. f. O. 1872, p. 298) says that a male he shot has the breast "blackish brown, the feathers having black shafts and dark brown edgings; the abdomen blackish brown, with dark brown margins;" and that there is in the Pesth Museum a male in the brown plumage with the white shoulder-spot very visible, but not so dark as his bird; Mr. Homeyer states (J. f. O. 1872, p. 333) that he obtained a brown male from Lausitz; and, finally, I have before me a male from the Bosphorus, sexed by M. Alléon, in very dark plumage, the underparts being very dark brown, and another equally dark male shot by Mr. Severtzoff in Turkestan. Mr. Goebel (*l. c.*) gives a table, with description of eggs, nest, and parent birds belonging to eleven nests, from which it appears that in five instances the female was brown and the male with the underparts white, in two instances the female had the underparts white and the male was blackish brown, in two the female was brownish and the

male blackish brown, and in the remaining two instances both sexes had the underparts white. This, I think, clearly proves that the dark plumage is not that of the female alone; and the conclusion at which I arrive is that, like several of the Buzzards (amongst which I may especially name my old American friend, *Archibuteo sancti-johannis*), the present species is subject to great variation in the coloration of the plumage in both sexes irrespective of age. In Spain these dark varieties do not appear to be very common; and Lord Lilford informs me that of the numbers he saw he only observed one individual in the dark brown plumage.

The specimens figured are:—on the one Plate a female in light plumage, and in the background another bird with reddish brown underparts, both from Spain; on the second Plate are figured the two nestlings in Mr. Howard Saunders's collection, with the dark female in the background; and on the same Plate, with the old specimen of *Nisaetus fasciatus*, an old bird, showing the white shoulder-spots, from the collection in the British Museum, is figured.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Seville, 1869 (*Lord Lilford*). *b*, ♂. Almoraima, near Gibraltar, May 4th, 1871 (*H. L. Irby*). *c*, ♀. Castellejo, Spain, May 14th, shot from nest (*H. E. D.*). *d*, ♀. Villemayor, New Castile, May 1865 (*Lord Lilford*). *e*, ♂. Turkestan (*Severtzoff*).

E Mus. Brit. Reg.

a, ♂ *juv.*, *b*, *pull.* Europe. *c*, ♂ *ad.* Spain. *d*, ♀ *juv.* Egypt (*W. B. D. Turnbull*). *e*, ♀ *ad.* South Africa. *f*, ♀ *juv.* Nepâl (*B. H. Hodgson*).

E Mus. H. J. Elwes.

a, ♂, *b*, ♀. Buyukdere, near Constantinople, April 15th, 1869 (*Alléon*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀, *c*, *d*, *pulli*. Soto de Roma, Spain, June 20th, 1870.



$\frac{1}{3}$

LESSER SPOTTED EAGLE.

AQUILA POMARINA.

(LESSER SPOTTED EAGLE.)

? *Spotted Eagle*, Lath. Syn. i. p. 38. no. 15 (1781).
? *Falco maculatus*, Gmel. Syst. Nat. i. p. 258 (1788).
Aquila nævia, Wolf, Taschenb. deutsch. Vogelk. i. p. 19 (1810, nec Gm.).
Aquila planga, Vieill. Encycl. Méth. iii. p. 1190 (1823, partim).
Aquila pomarina, C. L. Brehm, Vög. Deutschl. p. 27 (1831).
Aquila fuscoatra, C. L. Brehm, Vogelfang, p. 10 (1855).
Aquila subnævia, C. L. Brehm, Vogelfang, p. 10 (1855).
Aquila pomarina, L. Brehm, Allg. deutsch. naturh. Zeit. ii. p. 18 (1856).
Aquila assimilis, L. Brehm, Allg. deutsch. naturh. Zeit. ii. p. 20 (1856).
Aquila maculata (Gm.), Dresser, Ann. Nat. Hist. xiii. p. 373 (1874).
Aquila rufonuchalis, W. E. Brooks, Stray Feathers, iv. p. 269 (1875).
Aquila nævia auctt. partim.

Aigle tacheté, French; *Aquila anatraja*, Italian; *Schreiadler*, German; *Skrigörn*, Danish.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 18; Kjærb. Orn. Dan. taf. 1, and Suppl. taf. 1; Fritsch, Vög. Eur. taf. 6. fig. 3, taf. 8. fig. 4; Naumann, Vög. Deutschl. taf. 10, 11; Gould, B. of Eur. pl. 8; Susemihl, Vög. Eur. taf. 20?

♂ *ad.* sordidè fuscus, plumis pallidiore marginatis: pileo et nuchâ pallidè fusco-cervinis: remigibus et rectricibus nigro-fuscis, rectricibus externis saturatè cinereo apicatis et indistinctè transfasciatis: tarsi plumis sordidè fuscis, pallidiore notatis: rostro corneo, cerâ et pedibus flavis: iride flavo-fuscâ.

♀ *ad.* mari similis sed major et ubique saturatiùs colorata.

Juv. saturatè chocolatino-fuscus, corpore suprà vix purpureo nitente: pileo et collo postico rufescente ochraceo guttatis: nuchâ plagâ magnâ rufescenti-ochraceâ notatâ: dorso et tectricibus alarum minoribus rufescente ochraceo guttatis: tectricibus alarum majoribus et scapularibus versus apicem conspicuè cinereo guttatis: remigibus nigricantibus vix purpureo tinctis, secundariis nigro-fuscis versus apicem maculis griseis irregulariter ovatis notatis: caudâ nigricante griseo lavatâ et cinereo apicatâ: uropygio ochraceo maculato: supracaudalibus ochraceo-albo terminatis: corpore subtùs saturatè chocolatino-fusco, rufescente ochraceo striato: tarsis fuscis, vix ochraceo-albido notatis: subcaudalibus ochraceo-cervinis.

Adult Male (Danzig). General colour dark earth-brown, but the edges and tips of the feathers are worn and faded to light brown, the crown and nape being pale creamy brown; quills and tail blackish brown, the outer tail-feathers tipped with dark grey, and showing very indistinct traces of lighter bars; tarsal feathers dull brown slightly intermixed with lighter brown; bill dark horn; cere wax-yellow; iris

yellowish brown; feet pale yellow. Total length about 2 feet, culmen 1·8 inch, wing 17·7, tail 9·5, tarsus 3·8, middle toe with claw 2·5.

Adult Female (Silesia). Resembles the male, but is larger in size, and rather darker in general coloration of plumage.

Young (Silesia). General colour dark brown with a chocolate tinge, the upper parts with a faint purplish gloss; crown and hind neck dotted with small ochreous rufescent spots, and a large patch of this colour on the nape; back and lesser wing-coverts also dotted with these small spots; larger wing-coverts and scapulars with large greyish terminal spots; quills blackish with a purplish gloss, the secondaries brownish black terminated with greyish, the inner secondaries having large irregularly ovate greyish spots at the tip of the feather; tail blackish washed with grey, all the feathers tipped with ashy grey, the outermost feathers a full inch shorter than the central ones; rump spotted with warm ochreous, the lower tail-coverts creamy white on the terminal portion; underparts deep chocolate-brown striped with rufescent ochreous; tarsi dark brown slightly spotted with creamy white; under tail-coverts creamy ochreous.

Obs. A somewhat older bird than the young one above described, from Malta, is paler in general coloration, the spots on the upper parts and wings have nearly disappeared, and the nape-spot is faded to creamy buff; the spots at the tips of the larger wing-coverts, however, are very distinct, and the under parts of the body are very distinctly striped.

A fully adult female from Brunswick is much darker than the old male above described, being almost chocolate-brown on the upper parts,—evidently in fresh plumage before it has become worn by the sun and weather.

Few of our European birds have of late years been the cause of so much discussion in print as the Spotted Eagle and the Steppe and Imperial Eagles, more especially the first-named of these. And it is a subject most difficult of elucidation; for at least three species, and in many cases more, have been confused under the name of *Aquila nævia*, and in many instances it is almost impossible to say which species is alluded to under that name. Messrs. Brooks, Hume, Anderson, and others in India, and Messrs. Gurney, Sharpe, and myself have all assisted in heaping up a mass of notes on the subject, which makes it quite a serious matter to attempt to read up the question; but the result at which we have arrived (and we are now all tolerably well agreed) is that there are two species of small Spotted Eagles—one, *Aquila hastata*, inhabiting the Eastern Palæarctic Region, and the other, *Aquila pomarina*, inhabiting the Western Palæarctic Region. Besides these there is the Larger Spotted Eagle (*Aquila clanga*), which extends from the west of Europe to China, and southward in Africa as far as Sennaar. By no means the least-difficult part of the subject is the question as to which name each of these three species should bear. There is, I think, no doubt that the Indian Lesser Spotted Eagle should bear the name of *Aquila hastata*; but it has long been a matter of doubt which names belong to the Larger and Lesser Spotted Eagles. That *Aquila nævia* cannot possibly be used for either I have, I think, already satisfactorily demonstrated; but it may perhaps be interesting to my readers to have more concise data on the subject. Schwenckfeld appears to have been the first to use this name, as far back as 1603; and as his work is exceedingly rare, I transcribe his description (Theiotropheum Silesiæ, Liber Quartus (Aviarium Silesiæ), p. 219–220) as follows:—

"*Aquila nævia.* Ein rötlichter Meuse-Ahr. Magnitudine æquat Gallinam domesticam, longitudo ei spithamarum duarum cum dimidia. Latitudo alis extensis spithamarum quinq. et digitorum trium. Rostrum aduncum nigro cæruleum, digitos duos longum, deorsum recta propemodum tendens membranula capiti conjunctu lutea; tunicæ, quæ tota lanugine candida integitur, oculos integentis ora exterior flavet. Color totius corporis obscure ferrugineus est, præter maculam in prona parte albam, qua pectus veluti zona adornatur. Mentum obscurè albet. Alarum remiges pennæ extremæ fuscæ, omnes transversim obscuris maculis tinguntur. Interiores autem pennæ albicant. Pupillam cæruleam subnigricantem circulus ambit bæticus. Cauda similis cum corpore coloris, ex duodecem pennis spithamæ unius et digitorum trium, maculis latiusculis obscuris seu fuscis transversim insignitur.

"Sub. uropygio albicat, et collum pronum maculis longiusculis ceu lineis respergitur. Crura spithamam ferè longa; femora plumosa, ultra medium tibiam, quæ crocea, ut et digiti, tabellis seu annulis luteis intecti, unguibus nigris acutissimis.

"Mures ut gratum cibum devorare solet. Aviculas etiam anates et columbas venatur.

"Hanc vivam anno 1602 Decembri mense captam nobilis Dominus Daniel Gutschius ad me misit.

"Rarius in hisce montibus occurrit."

Schwenckfeld does not include any other species under the name of "Mäuse-Aar" or "Bussard," which are the common names of *Buteo vulgaris*; and it appears to me that his description is more applicable to that bird than to either of the Spotted Eagles.

Brisson, in 1760 (Orn. i. p. 425. no. 4), whose *Aigle tacheté* is the species on which Gmelin's *Falco nævius* (Syst. Nat. i. p. 258. no. 49) is based, does not describe the bird from a specimen before him, but refers to other authors, especially to Schwenckfeld, and also cites a plate in Frisch's 'Vögel Deutschlands,' as giving an accurate representation of his *Aigle tacheté*, in the following words:—"*Buteo*, Frisch, hujus icon accurata tab. 71." I possess a copy of Frisch's work; and on reference to the plate I found that the bird there represented is any thing but the Spotted Eagle, and might, I think, except for the partially feathered tarsi, possibly be meant to represent the Golden Eagle, though it does not agree with any stage of plumage of that bird which I have seen. It represents a large blackish-brown Eagle, regularly though indistinctly marked (so far as can be ascertained) by the centres of the feathers being darker than the outer portions; and the feathering on the tarsus only extends down to within about one third of the base of the claws, this latter portion being bare. Frisch, in his letterpress, speaks of it as the *Stein-Adler* or *Gänse-Aar* (the former being the German appellation for the Golden Eagle), and says that it is somewhat smaller than the Sea-Eagle. He further states that it has the tarsi only partly feathered, and is blackish brown in colour, like his *Aquila melanaëtus*, which is evidently the young of the Sea-Eagle. He speaks of having kept one for some time in captivity; and, so far as I can judge, the bird he had was a young Golden Eagle, more especially as he says that it inhabits rocky places and high mountains. He further writes that he thinks it may be a Buzzard ("ich halte nicht ohne Grund dafür, es sey dieses der rechte Busaar oder Bushard"). The above, I think, clearly shows that the bird figured by Frisch, to which Brisson refers as being an accurate representation of his "Aigle tacheté," cannot possibly be either the larger or the smaller Spotted Eagle. I may here remark that even the older authors appear to have been quite as unable to

fix the specific name of *nævia* with certainty to any species as we are; for Donndorff, writing in 1794, says that Klein referred it to the Goshawk, Buffon to the Black Kite, and Bechstein to the Peregrine, the following being his words (Orn. Beitr. zur Linn. Natursyst. i. p. 86):—"*Falco nævius*, nach Klein zu *Falco palumbarius* gehörig, nach Buffon mit dem vorhergehenden [*Falco ater*] einerley, nach Bechstein eine Spielart von *Falco peregrinus*." Altogether the uncertainty as to which bird is referred to under the name and description of *Falco nævius* and *Aquila nævia* is so great that there is no alternative but to discard this specific name altogether.

The next in order is *Falco maculatus* of Gmelin, which he describes (Syst. Nat. i. p. 258. no. 50) as follows:—"Longitudo bipedalis. Rostrum magnum et ungues nigri; irides cinereæ; pennæ scapularum et tectrices alarum apice macula ovali albicante insignitæ; dorsi maculis coloris bubalini; venter similibus lineis striatus." I previously considered that this description applied to the Lesser Spotted Eagle, and still think it not improbable that such may be the case; but in some respects it agrees with the young of the Larger Spotted Eagle, though not as regards size. It therefore appears unadvisable to use it for either species; and it also must be entirely ignored. We now come to *Aquila clanga*, Pall., the description of which is (as I believe is universally allowed) clearly applicable to the Larger Spotted Eagle, which will accordingly bear that name. Having found a name for the Larger Spotted Eagle, it now remains to find one also for its smaller ally, which is a matter of some difficulty. The name which comes next in date, and which is, I consider, that which will stand, is that of *Aquila pomarina*, given by C. L. Brehm (*l. c.*) in 1831; but, as is the case with almost all the species described in his 'Handbuch d. Naturg. Vög. Deutschl.,' the description of this bird is extremely faulty; and though there can be no doubt that the species to which he gives this name, as well as his *Aquila nævia*, are both the Lesser Spotted Eagle, yet he says that the nostrils are ear-shaped, having probably taken his description from a stuffed specimen; for in both the Spotted Eagles the nostrils are round. Ludwig Brehm, however, in 1856, in his "Notes on Birds not adequately described" (*l. c.*), under *Aquila pomarina*, gives excellent descriptions of both the old and young birds, clearly demonstrating that his father's *Aquila pomarina* really is the present species; and I have therefore no hesitation in using this name, and thus avoiding the necessity of making use of an altogether new name—and am the more pleased to do this, because the specific title of *pomarina* is by no means inapplicable; for the Lesser Spotted Eagle is the common Spotted Eagle of Pomerania. Some time ago, when working at the Spotted Eagles with Mr. W. E. Brooks, I was inclined to discard all Brehm's names on account of inadequate description; for I had not then had my attention attracted by Ludwig Brehm's article; and with Brehm's names set aside there would be no valid name for the present species. Mr. Brooks urged me to give the bird a new name; but this I refused to do, not wishing to rechristen so well-known a bird until I had fully convinced myself that none of the names already bestowed on it could stand; and Mr. Brooks, being free to act independently in the matter, decided on taking this course himself, and rechristened the bird, on account of the conspicuous nuchal patch in the immature dress, *Aquila rufonuchalis*. Mr. J. H. Gurney (Ibis, 1877, p. 330) indorsed Mr. Brooks's views, and adopted his name for the Lesser Spotted Eagle; but, after having gone carefully into the question with me, he now agrees that *pomarina* is the correct specific name to be used for this Eagle.

The present species, which will therefore bear the name of *Aquila pomarina*, has, compara-

tively speaking, a very restricted range; for it is found from the coasts of the Baltic to Nubia, having been met with as far east as Beyrout, and as far west as Switzerland. It is doubtful if it has ever occurred in Sweden; for, according to Professor Sundevall, there is no proof of a specimen having been obtained there: the single one in the Stockholm Museum, which came with the old Paykull collection, is said to have been shot in Lapland, though it may or may not really have come from there. It is difficult to trace the distribution of this Eagle in Russia, as it is so generally confused with the Larger Spotted Eagle; but Mr. Taczanowski informs me that it is common in Kieff, but in Eastern Russia is replaced by *Aquila clanga*. The same gentleman informs me it is common in Lithuania and throughout Poland, where it frequents both the larger and smaller forests, being most numerous in swampy districts, and where the Souslik (*Spermophilus guttatus*) is found. It arrives late in April, and remains until the end of September. It is also found in North Germany, especially in Prussia and the portions bordering the Baltic, but appears to be rapidly decreasing in numbers. Many years ago, when as a lad I collected near Stettin, it used to be quite common, and there was no difficulty in getting skins; but now it is scarcely possible to obtain any, especially birds in the spotted or immature dress. Borggreve (Vogelf. Norddeutschl. p. 58) states that, "though found in Eastern Germany during the summer wherever there is forest near swamps, it is, curiously enough, altogether wanting in the west, and is never seen in Westphalia during migration, being only occasionally obtained on the Rhine and in Oldenburg. He found it breeding in Upper Silesia, though not so common as in Brandenburg. It occurs in Mecklenburg; but the Elbe appears to be the general boundary of its range, and its most extreme south-westerly habitat in North Germany is probably the Harz, where Blasius met with it." Von Homeyer, who remarks (J. f. O. 1870, p. 215) on its gradual decrease in Pomerania, adds that it appears to be on the increase in Lower Silesia, though it is rather rare there also. Near Glogau and Steinau a/O. it is a regular breeding species, as also, according to Tobias, in the town-forest of Görlitz. Colonel von Zittwitz has several times received specimens from near Magdeburg. Borggreve, in the appendix to his work on the ornithology of North Germany (J. f. O. 1871, p. 211), says that, according to Blasius, the present species has been found breeding as far west as Hanover and Hildesheim; and I have received a specimen shot from the nest near Brunswick. Mr. Jonas Collin writes that it is said to have bred in Mecklenburg, and has been shot in Schleswig. One from Holstein is, he adds, in the Copenhagen Museum; one was shot on Moen in November 1855; and one at Bindesböl, in Fyen, in October 1868. Mechlenburg also states that it bred during several years in the Stenderup forest, between Flensborg and Schleswig.

Westward of Germany it becomes difficult to trace the range of this Eagle; for it has not been separated from *Aquila clanga* by the French and Belgian authors, and where occurrences of a Spotted Eagle are recorded it is impossible to say which species is meant. It appears, however, certain that the larger species has occurred in Western Europe, more frequently, perhaps, than the present Eagle. One of them (or perhaps both) is said to occur accidentally in Lorraine and Flanders, as also in Luxembourg. A Spotted Eagle occurs in France; but Messrs. Degland and Gerbe give no details respecting its occurrence there. The species which has visited Spain is, I find, not the present species, but *Aquila clanga*. Bailly states that this Eagle is rare in Savoy, but that he met with it breeding there. In Switzerland it is said to be a very rare bird; and I

do not find it recorded as having been found nesting in that country. In Italy it occurs on passage; and specimens are to be found in almost all Italian collections, and it has also been obtained in Sicily; but I do not find it recorded from Sardinia by either Count Salvadori or Mr. A. B. Brooke. Professor Doderlein says that all the specimens he has seen from Modena, Sicily, and Genoa belong to the present species, and not to *Aquila clanga*; and Benoit states that it is resident and breeds (?) in the forests of the interior of Sicily. It has occurred more than once in Malta. Mr. C. A. Wright (Ibis, 1864, p. 45) says that one was shot in September 1859, and another in October 1862; and he has lent me, for comparison, a very fine young specimen obtained there on the 10th October 1874.

The present species occurs in Southern Germany, where it is found more or less numerously in most parts where the nature of the country is suitable to its habits. Dr. Fritsch says that both the Larger and the Lesser Spotted Eagles are met with in Bohemia, and that it (probably the present species) breeds in the southern districts, as for instance in the Velechviner and Zepper districts, near Frauenberg. Specimens were obtained on the 5th June, 1847, near Pardubic (*Hromadko*), near Svijan in 1849, and Kopidlno in 1850 (*Fierlinger*), Stodulek, near Prague, Kladrub in 1863 (*Lokaj*), and near Jicin in 1864 (*Dr. Schier*), &c. &c. There are several Austrian-killed examples of this Eagle in the Vienna Museum; and Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 294), in Transylvania "it is common and generally distributed in all wooded mountainous districts. We saw it at Szent Mihály, Görgény, and more frequently at Fanczal, near which place they were evidently breeding."

On the Lower Danube the larger species (*Aquila clanga*) appears to predominate; for all the specimens obtained by Mr. Farman in Bulgaria belonged to that species. Mr. E. F. von Homeyer says (J. f. O. 1875, p. 162) that he has examined specimens of the small form from Western Russia and Turkey in Europe; but Messrs. Alléon and Vian confuse the two species in their notes. Doubtless both species are found there; but the Spotted Eagle which breeds, they say, commonly in the forest of Belgrade is probably *Aquila clanga*.

In Greece, according to Dr. Krüper, the Spotted Eagle is common: but it would appear that the Larger Spotted Eagle is the form found breeding there, and the predominant one; for all the specimens I have seen from there belonged to that form,—though doubtless the present species also occurs on passage and in winter. And as regards Asia Minor the same may be said. All the Spotted Eagles which I have seen from Asia Minor, Palestine, and North-east Africa were referable to *Aquila clanga*, except one from Beyrout and one from Nubia, in the Norwich Museum.

In North-west Africa the present species does not appear to occur, being replaced by *Aquila clanga*, which is of rare occurrence on passage.

In habits the Lesser Spotted Eagle has much in common with the Buzzard, and, like that species, it feeds chiefly on frogs, small birds, and small rodents. Its flight is like that of the other Eagles, vigorous, but not very swift; and in fine weather it may be seen circling round, with outstretched almost motionless wings, at a great altitude; but when it flies low down it every now and then flaps its wings heavily. It may also not unfrequently be seen seated motionless on a bare branch or any open perch patiently watching for prey. From what I have seen of this species it does not seem to me to be very wild in its nature, but rather sluggish, and, if any

thing, wanting in courage like some of the Buzzards. It is a rather shy bird, and is well able to take care of itself by not permitting any one to approach within gunshot-range. It preys on waterfowl of various kinds, frogs, &c., and hence is very frequently found near water; but it also kills mice, squirrels, moles, young hares, and game birds of various kinds—chiefly, however, the smaller species; and, like its ally (*Aquila clanga*), it is said not to disdain carrion. It nests in the forests of North Germany, either building its own nest or else taking possession of the deserted nest of some other bird of prey, and usually deposits two eggs. Dr. Krüper, who has taken many nests of this Eagle, gives some interesting details respecting its nidification in Pomerania, which I translate (Naumannia, 1852, pt. i. p. 68) as follows:—"This Eagle is the commonest species in Pomerania, but frequents only localities where there is forest and plenty of ponds containing frogs; and as it feeds chiefly on frogs it places its nest somewhere near a pond. I have always found its nest on the skirts of the forest, in an oak, a beech, or a conifer; and it is sometimes placed high up, at others low down; but the lowest was one I found in the Mönkebuder forest in 1849, which was not more than 25 feet from the ground. The Spotted Eagle frequently makes use of the nest of some other bird of prey; and I found one on the 8th May, 1848, in possession of a nest from which three eggs of a Goshawk were taken on the 5th April. This year I found a Spotted Eagle nesting in a Buzzard's nest. The nest is larger or smaller according to its position, is usually two to three feet broad and high, and is constructed of dry branches intermixed with grass and leaves; the eggs are placed in a tolerably shallow cup on a bed of fresh spines of the pine tree, this lining being very characteristic of the nest of the Spotted Eagle. The nest is never built in the crown of a tree, but usually a little above the centre; and this season I found a fresh-built nest on a strong bough about ten feet from the main stem of the tree. When the nest is approached the bird frequently slips quietly off and does not show itself; but if the eggs are much incubated it does not readily leave its nest, but has to be driven off by knocking the tree or pelting the nest; and this is not always sufficient to send it off. Last year my brother found a nest, and knocked at the tree, but the bird did not leave it. On looking at the nest from a distance he could see the Eagle on it, and knocked again without success, and the bird did not leave until the tree was climbed. I have seldom heard the cry of this Eagle at the nest. On the 15th May last I heard in the Rothenklempnower forest the querulous call of the Spotted Eagle, and went thither with my guide. We had scarcely reached the pond when my companion saw the nest and threw a stick at it, when the Eagle at once flew off, and did not appear again. On the following day, when at some distance from the nest, I heard the continuous call of the Eagles; and at last my companion caught sight of both of them high up in the air; and he told me that the female, when sitting, calls to give notice to the male that she wants food. We were on another occasion guided to a nest by the call of the bird. The number of eggs is usually two, more seldom one. I found in Jädekemühl a single egg in an Eagle's nest in 1849, and again in 1850 also only one egg; but this year I had not time to examine this nest. I have never known this Eagle to deposit three eggs; and out of about thirty nests which I either examined myself or sent some one up the tree, four contained only one egg, and all the rest two. My companion above referred to told me a curious circumstance. He found in the Falkenwalder forest a Spotted Eagle's nest, from which the old bird flew as he approached it; and he saw at a distance an egg on the edge of the nest. He climbed up; and

instead of an egg he saw only a large, empty, broken shell. A few days later the Eagles again flew off the nest, which was found to contain an egg. A third time the bird flew off; and he examined the nest from curiosity, and found an egg half the size of the first one. How the first egg came to grief it is difficult to say. It is well known how greatly the eggs of this Eagle differ; indeed one seldom finds two eggs in the same nest alike in size or markings. The Spotted Eagle will lay again if the first-deposited eggs are taken or destroyed. On the 5th May 1850 I took the eggs out of a nest; and in the same nest eggs were again deposited and one young bird reared. On the 6th May I took the eggs of another pair, which afterwards reared a couple of young. The eggs are laid early in May; I have found them from the 5th and 6th to the 25th May; and last year the first two Spotted Eagle's eggs were found on the 30th April."

I possess a series of over twenty of the eggs of this Eagle, some obtained by myself and others by Dr. Krüper and other friends who collected for me in Pomerania, which exhibit considerable variation in coloration and size; they are spotted and blotched on a white ground with light and dark red, some being dotted closely all over with light red, others richly blotched with dark red, and others with the two shades of colour intermixed; some, but not all, have faint purplish grey shell-markings here and there on the surface of the egg. In size they vary from $2\frac{12}{40}$ by $1\frac{33}{40}$ to $2\frac{29}{40}$ by $2\frac{5}{40}$ inches.

In India the present species is represented by a nearly allied though clearly distinct species (*Aquila hastata*). Mr. W. E. Brooks gives (*l. c.*) the distinctions between the two species very clearly. In the adult plumage they resemble each other very closely; but *Aquila pomarina* has the occipital portion of the skull raised higher above the line of the top of the bill than in *Aquila hastata*. It has also a tendency towards rufous in the colour of the plumage in very old birds; and the head is generally paler. In the immature dress the difference between the two species is easily seen; for *Aquila hastata* lacks the rufous nape-spot, and it also lacks the spots on the lower back, and the wings are more spotted than in *Aquila pomarina*.

The specimens figured are the adult male and the young bird above described, the first being one obtained near Danzig, and the latter in Silesia.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Near Danzig, 1855 (*H. E. D.*). *b*, ♀ *ad.* Near Brunswick, July 3rd, 1872, shot from nest (*M. Schultz*). *c*, ♂, *d* ♀, *e*, *juv.* Silesia (*Schlüter*).

E Mus. C. A. Wright.

a, ♀ *juv.* Casal Luca, Malta, October 10th, 1874 (*C. A. W.*).

E Mus. Norv.

a, *ad.* Europe (*H. Birkbeck*). *b*, *ad.* Albania. *c*, *juv.* Beyrout (*Lamella*). *d*, *juv.* Nubia (*Verreaux*).

E Mus. Berol.

a, *ad.* Dieringshof Mark. *b*, *juv.* Neumark (*v. Klotzing*). *c*, *pull.* Mark. *d*, *pull.* Near Berlin.



1/3

LARGER SPOTTED EAGLE.

AQUILA CLANGA.

E.Neale lith

Hanhart imp

AQUILA CLANGA.

(LARGER SPOTTED EAGLE.)

? *Spotted Eagle*, Lath. Gen. Syn. i. p. 258 (1781).
? *Falco maculatus*, Gmel. Syst. Nat. i. p. 258 (1788).
Aquila clanga, Pall. Zoogr. Rosso-As. i. p. 351 (1811).
Aquila fusca, C. L. Brehm, Lehrb. Naturg. eur. Vög. i. p. 16 (1823).
Aquila bifasciata, C. L. Brehm, Vög. Deutschl. p. 25 (1831, nec Gray).
Aquila vittata, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Aquila unicolor, L. Brehm, Allg. deutsch. naturh. Zeit. ii. p. 12 (1856).
? *Aquila fulviventris*, L. Brehm, tom. cit. p. 14 (1856).
? *Aquila dubia*, L. Brehm, ut suprà (1856).
Falco clanga (Pall.), J. F. Naumann, Naturg. Vög. Deutschl. xiii. p. 40 (1860).

Schelladler, grosser Schreiadler, German.

Figuræ notabiles.

Naumann, Vög. Deutschl. taf. 342; Gould, B. of Eur. pl. 8; id. B. of G. Brit. i. pl. 3; Schlegel, Vog. Nederl. pl. 26; Cab. Journ. f. Orn. 1874, tab. 4. figs. 1, 2.

♂ *ad.* saturatè fuscus, corpore suprà vix purpureo metallico nitente: remigibus et rectricibus nigro-fuscis, his centralibus vix cinereo lavatis: supracaudalibus et subcaudalibus albo notatis: rostro corneo: cerâ et pedibus flavis: iride fuscâ.

♀ *ad.* mari similis sed major.

Juv. saturatè fuscus: scapularibus et tectricibus alarum majoribus et medianis versus apicem maculis magnis ovatis fusco-cervinis notatis, tectricibus alarum minoribus eodem colore guttatis: remigibus secundariis conspicuè griseo terminatis: uropygii plumis et supracaudalibus conspicuè fusco-cervino terminatis, harum nonnullis fere albis: caudâ nigro-fuscâ, fusco-griseo terminatâ: corpore subtùs vix chocolatino tincto et rufescente fusco striato: tarsi plumis saturatè fuscis, albido notatis: subcaudalibus ochraceo-cervinis.

Adult Male (Etawah, India). Entire plumage dark blackish brown, the upper parts with a metallic purplish gloss; quills darker blackish brown; tail unbarred, the central feathers slightly washed with greyish towards the outer part of the web; upper and under tail-coverts slightly marked with white; bill dark horn; cere and feet yellow; iris brown. Total length about 27 inches, culmen 2·35, wing 20·2, tail 11·0, tarsus 4·45.

Young Male (Etawah). Differs from the adult in being very profusely spotted with brownish buff; scapulars and wing-coverts closely spotted with large ovate spots, those on the lesser coverts being rather smaller and drop-shaped; secondaries broadly terminated with greyish; feathers on the rump and upper tail-

coverts brown only at the base, the rest of the feathers being warm brownish buff; the lower coverts almost white; tail blackish brown, tipped with greyish brown; underparts deep brown, striped with tawny brown; tarsi dark brown, marked with creamy white; under tail-coverts creamy buff.

Obs. The female does not differ from the male, except in size, being rather larger. I found a considerable variation in size in a series of examples; and the males of the present species which I have examined vary as follows—culmen 2·25 to 2·4 inches, wing 19·5 to 21·3, tail 10·5 to 12·0, tarsus 3·9 to 4·5; and females—culmen 2·25 to 2·4 inches, wing 21·0 to 21·8, tail 11·8 to 12·2, tarsus 4·3 to 4·5.

Compared with that of the Lesser Spotted Eagle, the range of the present species is very wide; for it is found from Western Europe to the far eastern portions of India, and possibly also to China.

It has been met with, but only as a rare straggler, in Great Britain. Professor Newton (Yarr. Brit. B. 4th ed. i. p. 21) says that the specimen figured in that work was, according to Mr. Davis, "shot in the month of January of the present year (1845) on the estate of Lord Shannon, and was at the time in a fallow field devouring a rabbit. Another bird, similarly marked, but reported to have been of a lighter shade of brown, was shot at the same place within a few days, but was unfortunately not preserved; both had been noticed during the two previous months sweeping over the low grounds in the neighbourhood, which is near Youghal, and between Castle Martyr and Clay Castle." In the 'Zoologist' for 1861 (pp. 7311 and 7817) Mr. Edward Hearle Rodd records the occurrence of two Spotted Eagles, both immature males, in Cornwall. The first was shot in Hawk's Wood, at Trebartha, near Cheesewring, on the 4th December 1860. The second was killed at St. Mawgan, near St. Columb, at the end of October or beginning of November 1861."

Thompson (B. of Ireland, i. p. 14) says that a bird which was described to him, and which, he was told, was shot at Horn Head, Donegal, in 1831, was, he believes, a Spotted Eagle; and one is stated by Wise to have been shot near Somerley, Hants, on the 28th December 1861. It has not been obtained in Scotland; but Mr. Robert Gray writes (B. of W. of Scotl. p. 8) that he thinks "it is not improbable that the Spotted Eagle has occurred in Skye. On my questioning Mr. Pack (who has been resident here for fourteen years, and eleven of them as gamekeeper) respecting the birds of Skye, he described a Spotted Eagle, though he had never heard of a species being so called, having been killed by one of the shepherds of the late Mr. Macleod, of Orbast, about the year 1840. Soon afterwards he himself saw another, and subsequently, within a short time, either a second bird or the same individual again." There is no doubt that it is the present species and not *Aquila pomarina* which has visited the British Isles; for Mr. Gurney has carefully examined the Cornish-killed examples, and convinced himself that they are referable to *Aquila clanga*.

In Scandinavia this Eagle is extremely rare, and has, in fact, only once occurred in Sweden, where one was shot, Professor Sundevall says (Sv. Fogl. p. 232), in Skåne in September 1842, and is now preserved in Lund. It has not been met with in Finland; and it is difficult to define its range in Russia, as it has been so generally confused with its smaller ally; but doubtless the present species is the one which predominates there, as I have never seen an example of the Lesser Spotted Eagle in collections from Russia. The present species is found in the wooded

portions of the Ural, and, Eversmann says, is common up to 56° N. lat. In the plains where there are but few or no trees it is replaced by the Steppe-Eagle. Mr. Taczanowski says that this Spotted Eagle is not rare in Poland, especially on the right bank of the Vistula, where in certain localities it nests nearly as numerously as *Aquila pomarina*. It arrives late in April, and leaves about the end of September. In North Germany the present species is very rare, being replaced by *Aquila pomarina*; and it is very improbable that it nests there.

Throughout the whole of Western Europe the present species is only known as a rare straggler; and, so far as I can ascertain, there is no undoubted instance of its having bred there. But the two species of Spotted Eagles have been so constantly confused, that it is extremely difficult to say which has been met with in localities where either or both may have occurred. There appears, however, no doubt that it has been found in France, and probably also in Belgium. Baron De Selys says that the Spotted Eagle (probably this species) has been obtained in Lorraine and French Flanders, that M. Degland found a specimen in the Lille market, and that M. Baillon has observed it in Picardy, in the woods between Montreuil and Abbeville. De la Fontaine records the capture of three examples of a Spotted Eagle in Luxembourg at long intervals. Either this or the Lesser Spotted Eagle is found as a straggler in various parts of France; and MM. Jaubert and Barthélemy-Lapommeraye state that it is one of the regular migrants through Southern France, and that a Spotted Eagle (probably, however, the Lesser Spotted Eagle) nests in the French Alps. Baron J. W. von Müller says that in Southern France young, spotted birds are generally seen, the old, spotless ones being of very rare occurrence. Professor Barboza du Bocage records the presence of a Spotted Eagle in Portugal; and the present species certainly occurs in Spain. There are specimens in the Museums of Valencia, Seville, and Jerez, which Mr. Saunders, speaking from memory, told Mr. Gurney (Ibis, 1877, p. 332) belonged to the present, or larger, species; and Lord Lilford has twice received examples from near Seville. One of these I have examined; and it is undoubtedly an immature *Aquila clanga*. In Italy both the Larger and Lesser Spotted Eagles occur on passage as stragglers; and examples are in most of the Italian museums; but it is by no means easy to say which form predominates. Doderlein remarks that all the examples he has seen from Modena, Sicily, and Genoa belong to the small form; and the specimen I have examined from Malta is also a Lesser Spotted Eagle; but Von Homeyer (J. f. O. 1875, p. 159) speaks of the present species as being of more frequent occurrence in Switzerland, Italy, France, and Southern Germany. In the museum at Halle, he says, he saw two young *Aquila clanga* labelled *Aquila nævia*; and in most of the collections in South Germany and Switzerland which he visited he saw examples of the present species similarly labelled. Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 294) that this Eagle is very rare in Transylvania, and is stated to breed in the neighbourhood of Hermannstadt. Herr von Pelzeln also "thinks it probable that it breeds in Transylvania." That it breeds commonly in the Lower Danube and in Turkey there is no doubt; for all the specimens obtained by Mr. Farman in Bulgaria belonged to this species. This gentleman, in his notes on the ornithology of that country, published in 'The Ibis,' says, referring to this species, it is "not uncommon in any part of the country, but most numerous in the neighbourhood of the Devna lakes and in the Pravidy valley. In its habits it strongly resembles the Buzzards, generally flying low in pursuit of its prey, which, if

belonging to the feathered tribes, it strikes in the air. It seldom soars to any great height, although on rare occasions I have seen it rise to a height from which it was hardly distinguishable. They generally rest on trees, preferring a dead or sear bough, whence they watch their prey, and, when the opportune moment arrives, dash off in pursuit, again returning to the same resting-place if unsuccessful. When thus engaged they will permit a very near approach; and thus they are very easily shot.

"In the spring of 1865 I observed a nest of this bird placed on an ash tree overhanging the stream at the southern entrance of the Pravidy valley: it was more neatly put together than most of the Eagles' nests, and was warmly and softly lined with the blossoms of the ash tree; it contained one young bird just hatched, and two eggs already cracked by the young birds within. On the edge of the nest were the two fore legs of a leveret. Directly I descended from the tree, one of the parent birds returned to the nest; and I observed her mate sitting on an old dead tree a couple of hundred yards off; this bird was intently watching a flock of some twenty or thirty Magpies which were busily engaged picking the bones of an old carcass that the Vultures had demolished. As I rode past, the Magpies took to flight, and the Eagle, leaving his resting-place, instantly started off in pursuit of them; on coming up to them he singled one out, and, after following it through a few intricate but futile attempts to escape, rose slightly above his prey and with one stroke felled it to the ground, and, following it as it fell, reached the ground almost at the same moment."

Examples obtained by Messrs. Elwes and Buckley in Turkey and Macedonia are also referable to the present species. These gentlemen say (Ibis, 1870, p. 68) that it was the commonest Eagle there. It breeds in the forest of Babadagh, in Bulgaria, and in the forest of Belgrade, near Constantinople. Examples brought from Greece by Mr. Hanbury-Barclay were also referable to *Aquila clanga*. Dr. Krüper writes that it occurs in Greece in the winter season, and breeds in Acarnania and Ætolia and likewise in Macedonia, but was not found breeding in Asia Minor. Lord Lilford writes (Ibis, 1860, p. 4), it was "very abundant, in January and February in 1857, in all the marshes of Epirus—less so, but still common, in the following winter. As soon as a gun is fired in any of the marshes about Butrinto, one or more of these birds is sure to appear and keep flying about from tree to tree, apparently on the watch for prey, though I never saw them pursue any bird, and imagine that they feed chiefly on rats, frogs, and such 'small deer.' I have seen this species several times in Corfu. I never observed it in summer; and, as far as I could find out, it is a regular winter visitor in Epirus, appearing in that country about the latter end of September, and remaining until the middle or end of March. I never saw one of this species except in or near marshes; and it is certainly the most tree-loving Eagle with which I am acquainted. It is not, according to my own observation, so common in Acarnania as in Epirus."

The present species of Spotted Eagle is found throughout Asia Minor; but Dr. Krüper did not meet with it breeding there. Mr. Danford informs me that he frequently saw it in the wooded districts near the Black Sea, and it is found in Palestine. Canon Tristram writes (Ibis, 1865, p. 251) that he found it "much more common in winter than in summer on the plains." He observed it only two or three times in the Lebanon in spring, and found its nest once, in a tree, between Nazareth and Caiffa.

In North-east Africa both the present species and the Lesser Spotted Eagle are found, but the present species appears greatly to predominate. Captain Shelley writes (B. of Egypt, p. 206):—"This is the most abundant species of Eagle in Egypt, but it is less plentiful in Nubia. During my visit to the Fayoom in February and March it was extremely plentiful, and was generally to be seen sitting still by the water's edge. I frequently found it devouring pieces of decomposing fish, which appeared to form its chief food in the Fayoom." According to Von Heuglin it is common in the winter on the lagoons of the Nile delta, and is found along the Nile southwards to Sennaar and Kordofan, and also occurs in Abyssinia. It certainly does not, he says, breed there, but leaves for the north in the spring. In North-west Africa the present species alone appears to occur. Loche says that it is rare in Algeria, only occurring on passage; and Favier does not appear to have met with it in Morocco.

In Asia proper the Lesser Spotted Eagle appears to be wanting, and the present species and *Aquila hastata* are the only Spotted Eagles found. Mr. Blanford did not meet with it in Persia; but Major St. John had one alive in Shiraz. There are two specimens from Bagdad in the British Museum, collected by Mr. Loftus; and Dr. Severtzoff states that it breeds throughout Turkestan. Mr. A. O. Hume writes (Stray Feathers, i. p. 158) as follows:—"This species was by far the commonest Eagle in Sindh, and scores were to be met with in the neighbourhood of every large piece of water. Every clump of tamarisk trees, standing well out into the water, as is so commonly the case in the broads of Sindh, was almost certain to be crowned by one of these black-looking Eagles. Elsewhere I have generally found them subsisting almost exclusively on frogs; here, to my astonishment, I twice shot them in the act of devouring fish, and on several occasions saw them strike at, and once or twice actually carry away, Snipe and other small water-birds that we had wounded. Whereas in other parts of the country outside the Subhimalayan belt *Aquila clanga* is a cold-weather visitant, and most of the birds seen are young ones in the strongly spotted stage of plumage, in Sindh the species is a permanent resident, and, as I ascertained from the fishermen, regularly breeds there in April and May, and scarcely a single bird was obtained in any but the dark adult plumage, with more or less white tarsi." I have received many specimens from various parts of India; and Dr. Jerdon says (B. of India, i. p. 59) that it is found throughout that country in suitable localities, and is tolerably common in the Carnatic and on the Malabar coast, but rare in the tableland. Referring to its range in India, Mr. A. O. Hume writes (Rough Notes, p. 165) as follows:—"*Aquila clanga*, with us, at any rate, is a bird frequenting moist localities. Where large jheels abound, or where canal irrigation is extensively resorted to, there *Aquila clanga* (in Upper India at any rate) is very common; but in the dry sandy plains, which occupy so vast a portion of the surface of continental India, this species is extremely rare. A remarkable fact as to change of geographic distribution resulting from modification of the physical aspect of a country by human industry came under my own notice in connexion with this species. The Etawah district, between Cawnpore and Agra, belonged essentially to the dry sandy class. For years I shot through this district without ever obtaining a single specimen of the Spotted Eagle. After a time the Ganges canal, with innumerable minor channels, was opened out through the district. Huge tracts came under irrigation. A year or two passed away, when suddenly one day, shooting with Mr. Brookes, along the canal, we found the Spotted Eagle common. Subsequently numerous specimens were obtained at

various localities in the district in the neighbourhood of the canal. I thought I might possibly have overlooked this species in past years; but this seemed unlikely, because winter and summer I daily had one or two men out shooting, and, even had I always passed it over, one or other of them must have killed it. However, this matter was set at rest by several Aheriahs (native hunters and bird-catchers by caste) spontaneously pointing out this bird to me as having only appeared in the district during the last two years. This species has always been plentiful in the Dhoon and the northern portion of the Suharunpoor district, in which the Ganges canal has its origin; and there can be little doubt that as the canal, year by year, was opened out further and further, developing tracts suited to their tastes, the Spotted Eagles (whose favourite food with us is unquestionably frogs) rapidly followed its course." According to Captain Feilden (Stray Feathers, iii. p. 25) it has occurred in Upper Pegu; and Mr. Gurney remarks (Ibis, 1877, p. 331) that a specimen in the Norwich Museum, formerly in the Museum of the Zoological Society of London, is recorded as having been obtained in Sumatra by the late Sir Stamford Raffles.

In Siberia the Spotted Eagle does not range very far north; Von Middendorff does not include it; but Von Schrenck says that it is found right through Siberia to Kamtschatka, and that Mr. Maack obtained it on the Lower Schilka. I have seen examples sent by collectors in Siberia to M. Verreaux, obtained, if I recollect right, near Lake Baikal; but it is difficult to say if Dr. Radde obtained it in Mongolia; for he has united (under the name of *Aquila nævia*) *Aquila nipalensis*, *Aquila nævioides*, *Aquila pomarina*, *Aquila clanga*, and *Aquila crassipes* of Hodgson, this last being the Eastern Imperial Eagle. Judging from Dr. Radde's descriptions, he appears to have obtained chiefly, if not only, specimens of *Aquila nipalensis*; and scarcely any agree with the present species. According to Père Armand David (Ois. de la Chine, p. 11), this species is the rarest of the Chinese Eagles; for he has only seen three examples from there; but, he adds, it is tolerably common in Cochin China. Colonel Prjevalsky states (Rowley's Orn. Misc. pt. vi. p. 145) that he only obtained one male, in the spring of 1871, at the Dalai-nor, since when he met with it two or three times in South-east Mongolia, but did not observe it either in Kan-su or Koko-nor.

In habits this Eagle, like the Lesser Spotted Eagle, bears great affinity to the Buzzard. It is somewhat heavy in its general movements, and may often be seen sitting quietly on some elevated perch waiting for prey. Its flight resembles that of the Lesser Spotted Eagle, but is, perhaps, rather heavier and more laboured. In note, however, the two species differ materially; the cry of the present bird is a yelping note, like the syllables *jeb*, *jeb*, *jeb*. Like *Aquila pomarina*, it is said to feed with avidity on frogs. It not unfrequently devours carrion, and is said also to eat fish: Eversmann states that he has found quantities of fish-bones near the nest of one of these Eagles; Von Heuglin also states that it feeds on fish; and Dr. A. Leith Adams writes (Ibis, 1864, p. 8), this Eagle may often be seen in Egypt, "either in fields hunting after reptiles and small quadrupeds, or feeding on fish on the sandbanks. I found portions of a large snake in one killed near Thebes, and on another occasion surprised a pair intently devouring a large Lepidotus (*Characinus dentex*, Sav.)."

This Eagle, like the Lesser Spotted Eagle, invariably breeds in a tree, never on the ground. It constructs its nest of boughs like that of *Aquila pomarina*, but makes a larger nest than that species. It usually breeds in the large forests, and never, Eversmann says, near the villages, and

is said to place its nest not far from water. Its eggs, two or three in number, resemble those of the Lesser Spotted Eagle, but are rather larger in size.

The specimens figured are the adult and young males above described, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Pomerania?, March 1873 (*Schmidt*). *b*, ♂ *juv.* Katilo, S. Albania, November 13th, 1867 (*Hanbury Barclay*). *c*, ♂, *d*, ♀ *juv.* Etawah, N.W. Provinces, India (*W. E. Brooks*). *e*, ♂ *juv.* Etawah, November 20th, 1869 (*W. E. B.*). *f*. Etawah, June (*W. E. B.*). *g*, ♂. N.W. India, February 26th, 1872 (*A. Anderson*).

E Mus. Berol.

a, ♂ *juv.* Tor (*Hemprich and Ehrenberg*). *b*, *ad.* Egypt (*Sellman*). *c*, ♀ *juv.* Ural (*Eversmann*). *d*, ♂, *e*, *juv.* Lake Baikal (*Dybowski*).

E Mus. Hanbury Barclay.

a, *b*, *juv.* Albania (*H. B.*).

E Mus. Brit. Reg.

a. Southern Russia. *b*, *c*, ♂ *ad.*, *d*, ♀ *ad.* Southern Ural (*Dr. Stader*). *e*, *f*, *ad.*, *g*, *juv.* Bagdad (*K. Loftus*). *h*, ♀ *ad.* Madras (*Dr. Jerdon*). *i*, ♀ *ad.* Nepal (*B. H. Hodgson*). *k*, ♀ *ad.* Darjeeling.



STEPPE EAGLE.

AQUILA NIPALENSIS

AQUILA NIPALENSIS.

(STEPPE-EAGLE.)

Aquila bifasciata, J. E. Gray, Ill. Ind. Zool. i. pl. 17 (1832, nec Brehm).
Aquila nipalensis, Hodgs. Asiat. Res. xviii. pt. 2, p. 13, pl. 1 (1833).
Aquila nævia, var., Eversmann, Journ. für Orn. 1853, p. 61.
"*Aquila clanga*, Pall.," Cabanis, tom. cit. p. 61, footnote (nec Pallas).
Aquila orientalis, Cabanis, Journ. für Orn. 1854, p. 369.
"*Aquila pallasii*, A. Brehm," L. Brehm, Allg. deutsch. naturh. Zeit. ii. p. 10 (1856).
Aquila mogilnik bifasciata, Schl. Mus. Pays-Bas, *Aquilæ*, p. 3 (1862).
Aquila imperialis, Jerdon, B. of India, i. p. 57 (1862, partim).
Aquila nævia (var. *orientalis major*), Radde, Reis. im Süd. von Ost-Sib. ii. p. 90 (1863).
Aquila nævia (var. *bifasciata*), Radde, tom. cit. p. 90 (1863).
Aquila nævioides, J. H. Gurney, Ibis, 1870, p. 68 (nec Cuv.).
Aquila amurensis, Swinh. Proc. Zool. Soc. 1871, p. 338.
Aquila mogilnik, Sharpe, Cat. B. Brit. Mus. i. *Accipitres*, p. 240 (1874, nec Gm.).

Podorlik, Russian; *Karageush*, Bashkir; *Kondozmer-varesh*, Ziranin.

Figuræ notabiles.

Gray, *l. c.*; Hodgson, *l. c.*

♂ *ad.* corpore suprà sordidè et pallidè brunneo in nuchâ vix pallidiore et pileo saturatiore: scapularibus et secundariis intimis saturatè brunneis: remigibus nigro-fuscis, primariis ad basin et secundariis in pogonio interno griseo marmoratis, his vix pallidè brunneo apicatis: tectricibus alarum dorso concoloribus, sed nonnullis pallidiore marginatis: uropygio sordidè brunneo, plumis fere omnibus pallidè fulvido marginatis: supracaudalibus albis brunneo notatis, lateralibus rufescente lavatis: caudâ nigro-fuscâ indistinctè griseo transfasciatâ et pallidè brunneo apicatâ: corpore subtùs pallidè brunneo, in abdomine imo pallidiore et vix rufescente adumbrato: subalaribus rufescenti-brunneis, inferioribus albidis vix griseo marmoratis: subcaudalibus brunnescenti-isabellinis vix rufescente tinctis: cerâ et pedibus pallidè flavis: rostro plumbescenti-corneo: iride brunneâ.

♀ mari similis, sed major.

Juv. corpore suprà et subtùs saturatè fusco, vix purpurascente tincto: mento et abdomine imo vix pallidioribus, et pileo saturatiore: supracaudalibus ochrascenti-cervinis: remigibus ut in adulto coloratis, sed primariis vix et secundariis valdè rufescente isabellino terminatis: tectricibus alarum majoribus conspicuè eodem colore terminatis, et tectricibus medianis nonnullis eodem colore apicatis: caudâ ut in adulto, sed rufescente ochraceo valdè terminatâ: subalaribus sordidè et saturatè brunneis rufescente ochraceo apicatis: subcaudalibus sordidè rufescenti-ochraceis.

Adult Female (Volga, May). Upper parts pale dull earth-brown, rather paler on the nape, but darker on the crown; scapulars and inner secondaries darker, some of the latter, which are evidently fresh-

moulted feathers, blackish brown; primaries at the base above the emargination blackish, mottled with greyish, the terminal portion of the feathers, below the emargination, being blackish brown, secondaries blackish brown, marbled on the inner web with greyish, some having scarcely perceptible light tips; wing-coverts similar to the back, but some have indistinct light margins; rump dull brown, most of the feathers with dull pale fulvous margins; upper tail-coverts white, slightly marked with brown, the lateral ones washed with pale rufous; tail blackish brown, marbled with ashy grey, this marbling forming indistinct bars, tip of the tail very narrowly edged with light brown; under surface of the body dull earth-brown, much paler on the lower abdomen, which has a rufous shade; under tail-coverts dull creamy brown, with a slight rufous tinge; under wing-coverts slightly washed with rufous, the lowest series white, slightly marbled with dusty grey; cere and gape pale yellow; bill bluish horn; feet pale yellow; iris brown. Total length about 31 inches, culmen 2·7, height of culmen at base 1·1, wing 23·0, tail 11·75, tarsus 3·8, middle toe without claw 2·3.

Adult Male (Volga, May). Resembles the female, but has the head, chin, and throat lighter in colour, the throat, sides of the head, and nape being pale sandy brown; the wing-coverts are darker in colour, evidently more recently moulted; and the upper tail-coverts have broad brown tips. In size it is smaller than the female, measuring only—culmen 2·4, height of culmen at base 1·0, wing 20·5, tail 10·7, tarsus 3·7, middle toe without claw 2·1.

Young Male (Volga, 31st July). Upper and underparts uniform dark earth-brown, with a faint purplish tinge, rather paler on the chin and lower abdomen, and darker on the crown; upper tail-coverts bright ochraceous fawn; quills as in the adult, but primaries very slightly tipped, and the secondaries broadly terminated with rich reddish cream or ochraceous fawn; primary coverts and larger wing-coverts also similarly terminated, the median coverts only here and there having these light tips; tail as in the adult, but broadly terminated with dull rufescent ochraceous; under wing-coverts dark earth-brown, here and there tipped with creamy rufous; under tail-coverts dull rufescent ochraceous.

A young bird which could only have just left the nest, the tail being quite short, resembles the above; but the upper parts have a more distinct purplish tinge, and the rufescent ochraceous markings are much more clearly defined, the inner secondaries having the entire centre of the terminal third of the feather rufescent-ochre, and some of the lesser wing-coverts being also tipped with this colour; on the lower part of the abdomen some of the feathers have narrow white tips; and the short tail has a very broad light-rufescent-ochraceous tip.

Obs. A specimen from the Bosphorus, evidently an old bird, differs in being generally darker in plumage, the crown being much darker, and the nape rusty yellow, and has likewise the upper tail-coverts uniform dark brown. Another adult bird from India resembles this specimen, but has the upper tail-coverts yellowish white, barred and tipped with dark brown.

This species may always be distinguished from the Spotted Eagles by having a vertical and not a round nostril.

Readers of the various periodicals in which recent ornithological essays have been published will well understand the extreme difficulty in defining the precise range of the present species; for by some ornithologists it has been confused with the Imperial Eagle, whereas others have considered it to be a form or race of the Spotted Eagle, and it has been referred to by such an infinity of names, most frequently without any description by which it could be recognized, that it is often impossible to trace whether the Imperial Eagle, the Spotted Eagle, or the present species is referred to. As a rule the Indian ornithologists have referred it to the Imperial Eagle; whereas, on the

other hand, the Russian naturalists have usually referred it to the Spotted Eagle, and the specimens afterwards described by Dr. Cabanis, under the name of *Aquila orientalis*, were sent from Southern Russian by Dr. Eversmann as varieties of *Aquila nævia*.

The present species appears, so far as I can gather from a careful examination of all available published information, to inhabit South-eastern Europe, ranging northward into the central portion of Eastern Europe, and in Asia it is found throughout Southern Siberia and India. Mr. Sabanäeff informs me that it is common in the Ural as far north as 58° N. lat., and he did not meet with it beyond Bogosloffsk. He found it numerous on the western slope of the Ural, near Ekaterinburg, but on the eastern side, near Schadrinsk, it was rare; it is common in the southern portions of the Perm Government, as also in that of Voronege, and breeds all along the Volga. He may, I think, to some extent have confused the Eastern Spotted Eagle (*Aquila clanga*, Pall.) with the present species, as he speaks of it as breeding in all the large woods in the interior of Russia. How far westward into Europe it extends I am unable to say; but it is said to be common during migration near Constantinople, and I think it not improbable that it breeds in the countries through which the Lower Danube flows. I have no data as to its occurrence in Northern Africa, and am unable to say how far south those birds which are found passing the Bosphorus on their journey southwards extend their range.

To the eastward it certainly occurs across into Eastern Siberia; and Dr. G. Radde (Reis. im Süden von Ost-Sib. ii. p. 85), who brought back specimens which he identifies with the type specimens of *Aquila orientalis*, Cab., in the Berlin Museum, says that in the elevated steppes of Dauria it is certainly one of the commonest Eagles. He shot the specimens he describes at Tarei-nor late in April and early in May, and he found it breeding in the steppes. In India, Mr. Brooks informs me, it is only a cold-weather visitant, and does not remain to breed there.

It is exceedingly difficult to cull reliable information respecting the habits of the present species, as it has been so generally confused with other allied species. It appears to be somewhat ignoble in its habits, feeding, like the Buzzards, on small rodents, reptiles, and birds, and not disdaining to join the Vultures in feasting on carrion when such is to be found. It appears to frequent the plains and flat country in preference to the more elevated districts, and is said to be especially numerous on the bush-covered and bare flat steppes of Southern Russia, as well as in the more lonely wooded districts, and is often met with near the villages and inhabited localities. Mr. Möschler's collector, who has sent numerous specimens and many eggs of this Eagle from the Lower Volga, informs me that it never breeds in trees, but invariably places its nest either on the ground, frequently on a hill-side, or amongst the bushes. The nest is tolerably bulky, and constructed like that of the Spotted Eagle. Dr. Radde, whose descriptions and measurements leave no doubt that the birds obtained were this species, writes (*tom. cit.* p. 93) that he found its nest both in Mongolia and in the steppes of Southern Russia; its nest he almost always found on the ground, generally near some mound, and in Southern Russia very frequently placed on a tumulus or grave-mound; it is loosely and carelessly constructed of branches and finger-thick twigs and sticks, and carefully lined.

In its habits the present species is described by Dr. Radde as closely resembling the Imperial Eagle. It sits for hours waiting patiently for prey on a marmot mound or an old tumulus, and is by no means a noble bird, but partakes far more of the Buzzard in its habits,

being but a very poor hunter, and is of no use in falconry. Very early in the morning, even before sunrise, it visits the corn-fields when the grain is in shocks, and takes its position on one of these, or on a hay-cock in the hay-fields, in order to be able to have a clear view for some distance round. It frequently joins the Imperial Eagle and the common Kite in a feast on carrion, and, like those, will frequently gorge itself. It flies low, and strikes quickly and strongly with its wings; and he never saw it soaring in circles like some of the Eagles do.

I possess a fair series of eggs, several of which I received through Mr. Möschler, together with the parent birds, the remainder having been sent to me by Mr. Sabanäeff from the Southern Ural. They closely resemble those of the common Spotted Eagle in colour and markings, but are larger, measuring from $2\frac{2}{40}$ by $2\frac{2}{40}$ to $2\frac{3}{40}$ by $2\frac{9}{40}$ inches in size. Dr. E. Rey, who has examined a considerable number of undoubtedly genuine eggs of this Eagle, informs me that it is impossible to distinguish, with any degree of certainty, large eggs of the Pomeranian Spotted Eagle from small eggs of the present species, as the eggs of both vary very considerably. He writes that he has carefully measured fifteen of the present species and fourteen of the Spotted Eagle, and finds that the former average 67·2 by 55·2 millimetres, the largest measuring 70·0 by 54·75 and 67·0 by 55·25, and the smallest 60·5 by 51·5 and 63·0 by 50·5, whereas those of the Spotted Eagle average 64·1 by 51·1, the largest measuring 69·0 by 54·25, and the smallest 60·0 by 50·0 millimetres. Two eggs are usually deposited.

Mr. Möschler's collector writes that the parent birds may easily be obtained by laying in wait near the nest; for they are sure to return within half an hour after having been disturbed and driven from the nest.

It is only, comparatively speaking, quite lately that the specific distinctness of the present species has been acknowledged by ornithologists; for though described and figured by Dr. J. E. Gray in 1832, and by Mr. Hodgson in 1833, it was generally supposed that both those authors had described specimens of the Imperial Eagle in young plumage. Much credit is due to the Indian naturalists for the careful researches made by them respecting the various plumages of the Eagles; and amongst those who have probably done most towards defining the plumages of the present species I may name first Mr. A. O. Hume and Mr. W. E. Brooks, and then Mr. A. Anderson, who came into the field rather later, after Messrs. Hume and Brooks had already been some time at work, but has been equally painstaking and indefatigable in the cause. Mr. Brooks first ascertained from the examination of a specimen from the Bosphorus that the species usually called by Indian ornithologists *Aquila bifasciata* was identical with the present species, and sent over a tolerably large series of skins for comparison. I, however, was until quite lately inclined to believe that the eastern and western forms of the present species were distinct; and there is no doubt that, as a rule, Indian examples run considerably larger in size than those obtained in Europe; but, after having examined a large series from various localities, I find that Mr. Brooks's view is undoubtedly the correct one, and the present species ranges from Eastern Europe into India and South-eastern Siberia. I published some crude notes on this Eagle in the P. Z. S. (1873, pp. 514–517), and there gave detailed measurements of four Indian and four European specimens, so as to show the difference in size.

I may here make a few remarks respecting the synonymy of the present species. Mr. R. B. Sharpe (*l. c.*) has lately, without giving any reason for so doing, referred it to *Aquila mogilnik*

(Gm.), a view which I cannot at all indorse. I have again most carefully examined Gmelin's figure and description, and am more than ever satisfied that it refers to the immature Imperial Eagle, and not to the present species; and this view is evidently that taken by the Russian authors, who have generally confused the present species with the Spotted Eagle, and not with the Imperial Eagle; indeed the specimens which afterwards became the types of Cabanis's *Aquila orientalis* were sent to Berlin by Professor Eversmann (who certainly would be as likely as any one to know what Gmelin's *F. mogilnik* was) as varieties of the Spotted Eagle. Besides, I find from reference to Kessler and other Russian authors that the Russian name for the Imperial Eagle is *Mogilnik*; and this is an additional proof of what the species was to which Gmelin gave that name, evidently taken from its common Russian appellation. Besides, if Gmelin's description is so imperfect that it can be referred to two distinct species, it should have been thrown aside altogether, and the next one, about which there could be no doubt, adopted. Dr. Gray's name of *Aquila bifasciata* cannot be used, as it is preoccupied, having been made use of by C. L. Brehm in 1831 for the common Spotted Eagle. Therefore Hodgson's name of *Aquila nipalensis* will be the correct one to use for this bird, his description and figure being perfectly explicit and clear.

The specimens figured are an old female and a young bird, both from the Volga—these being the specimens described, and in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.* Volga, May (*H. F. Möschler*). *c*, *juv.* Volga, July 31st (*Möschler*). *d*, *e*, *f*, *juv.* Southern Russia (*Dr. J. Cabanis*).

E Mus. Berol.

a, ♂, *b*, ♀, *c*, *d*, *juv.* Sarepta (*Möschler*). *e*, ♂, *f*, ♀. Southern Russia, types of *Aquila orientalis* (*Eversmann*).

E Mus. Brunsv.

a, *b*, *c*, ♂. Volga. *d*, *e*. Southern Russia.

E Mus. J. H. Gurney.

a, ♂. Loyah, India, January 26th. *b*, ♀. Loyah, February 16th. *c*, ♀. Loyah, February 26th. *d*, ♂. Nubbegunge, India, December 4th (*W. E. Brooks*).

E Mus. H. J. Elwes.

a, ♂ *ad.* Bosphorus, March 4th (*Alléon*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Shot from nest with three eggs. *c*, ♂, *d*, ♀. Also shot from nest with three eggs, both pairs from the Volga, May 1870 (*H. F. M.*).



J.G.Keulemans lith.

Hanhart imp

TAWNY EAGLE.

AQUILA RAPAX

AQUILA RAPAX.

(TAWNY EAGLE.)

Falco rapax, Temm. Pl. Col. i. livr. 76, pl. 455 (1828).
Falco senegallus, Cuv. Règne Anim. i. p. 326 (1829).
Falco nœvioides, Cuv. ut suprà (1829).
Aquila choka, Smith, S. Afr. Quart. Journ. i. p. 114 (1830).
Aquila rapax (Temm.), Less. Traité d'Orn. p. 37 (1831).
Aquila vulturina, Benn. Gard. and Men. Zool. Soc. ii. p. 288 (1831).
Aquila senegallus (Cuv.), G. R. Gray, Gen. of B. i. p. 14 (1845).
Aquila nœvioides (Cuv.), G. R. Gray, tom. cit. p. 13 (1845).
Falco belisarius, Levaill. Expl. Sci. Algér. Ois. pl. 2 (1850).
?*Aquila raptor*, A. Brehm, Naumannia, 1855, p. 13.
Aquila variegata, L. Brehm, Naumannia, 1856, p. 267.
Aquila substriata, Heugl. Syst. Uebers. p. 6 (1856).
Aquila lestris, L. Brehm, Ber. orn. Versamml. Stuttg. 1860, p. 55.
Aquila culleni, Bree, B. of Eur. 2nd ed. i. p. 89 (1875).

Figuræ notabiles.

Temm. *l. c.*; Loche, *l. c.*; Lilford, Ibis, 1865, pl. v.; Bree, B. of Eur. 2nd ed. i. pls. to pp. 88, 89, and 93.

Ad. capite, collo, dorso et uropygio ochraceo-isabellinis, vix saturatè fusco notatis: scapularibus et tectricibus alarum saturatè fuscis vix purpureo nitentibus et ochraceo-fusco notatis: remigibus nigro-fuscis, secundariis in pogonio interno indistinctè griseo fasciatis: caudâ nigro-fuscâ vix griseo lavatâ, rectricibus centralibus vix fasciatis: corpore subtùs ochraceo-isabellino rufescente, gutture, abdomine et hypochondriis valdè fusco striatis: rostro corneo, cerâ flavâ: iride fuscâ: pedibus flavis.

Adult Female (S. Africa). Head, neck, back, and rump creamy ochreous slightly marked with deep brown; scapulars and wing-coverts deep brown with a purplish gloss, heavily blotched with ochreous clay-brown, most of the feathers being particoloured, quills blackish brown, the secondaries indistinctly barred with greyish on the inner web; tail blackish brown with a greyish tinge, the central rectrices with indications of bars; underparts warm creamy ochreous, the throat, flanks, and abdomen broadly striped with warm brown, the feathers on these parts having the sides brown and a broad central stripe only ochreous; bill horn-blue; cere yellow; iris brown; feet yellow. Total length about 26·5 inches, culmen 2·5, wing 20·0, tail 10·0, tarsus 3·6.

Adult (Kustendji, now alive at Antwerp, *fide* J. H. Gurney, Ibis, 1877, p. 228). "Iris hazel; cere, gape, and feet rather dull yellow; the crown of the head and back of the neck are bright rufescent fulvous, but with the rufous tint decidedly paler than in adult South-African specimens, and more resembling the colour of those parts in the South-African bird when immature; the ground-colour of the mantle generally is of a similar hue to the head and neck; but the interscapular and upper scapular feathers

have darker shaft-marks, and are also tinged with greyish brown, which is darkest along the sides of each feather, forming a tolerably distinct border and producing a particoloured feather, in some cases with a slight fawn tip, and resembling in character the corresponding feathers in the adult South-African bird, but with the contrast of tints much less strongly marked; the lower scapulars are of a dark slaty brown, faintly tipped with fawn, and showing, in some lights, a purplish reflection; the wing-coverts, except those of the primaries and secondaries, are fawn-coloured, this tint being unbroken along the ridge of the wing, but elsewhere varied with a slaty-black centre to each feather, which become more conspicuous in proportion as they recede from the ridge of the wing; the primary- and secondary-coverts are slaty black, some of the inner webs being tipped with whitish, and all the outer webs with fawn-colour; all the quill-feathers of the wing are black, with a tinge of grey on the outer webs, and with fawn-coloured tips; the secondaries also show some dark but rather indistinct transverse bars; the upper surface of the tail is dark slate-colour, with eight transverse bars of a darker hue visible on the middle rectrices, these bars being less distinct, and assuming more the character of mottling, towards the sides of the tail; all the rectrices have narrow fulvous tips; the entire under-surface is fawn-coloured, decidedly paler than the back, and with no dark markings, except a few narrow shaft-marks on the breast; the wing-linings and throat are paler than the rest of the under-surface; and the chin is nearly white; but with these exceptions there is hardly any perceptible variation in the tints of the underparts."

The Tawny Eagle inhabits Africa generally, and in the Palæarctic Region ranges as far east as Palestine; but it very rarely occurs on the northern side of the Mediterranean. Lord Lilford possesses an immature Eagle from Spain which, though somewhat doubtful, is probably referable to the present species; and he assures me that he has no doubt whatever that he has more than once seen this Eagle in Southern Spain. It is supposed to have occurred in France; but Mr. Howard Saunders informs me that he has recently most carefully examined the supposed examples obtained by Crespon, now in the Museum at Nîmes, and that in the Museum at Arles, cited by Degland and Gerbe, and they are certainly immature examples of *Aquila adalberti*, as are also several other specimens obtained in the Pyrenees. It is not known to have occurred in Italy, Southern Germany, or Greece; but there is an undoubted instance of its occurrence and nidification in South-eastern Europe, first referred to in a letter from Dr. W. H. Cullen (Ibis, 1867, p. 247). This gentleman obtained two nestling birds at Kustendji, Turkey, in the spring of 1865, one of which remained in his possession till January 1868, when he presented it to the Zoological Society of Antwerp, where it now is. Dr. Cullen, writing to Dr. Bree, says:—"I had two birds half-fledged brought me; and as I was attracted by their colour (a light cream) I bought them; one died, the survivor is at Antwerp. The whole plumage was this delicate 'fauve isabelline' silk down; and then it grew gradually developing itself into an almost perfect copy of your *Aquila nævioides*."

Sketches and a description of this specimen were sent to Dr. Bree (for the new edition of his 'Birds of Europe') by Professor Vandennest, of Antwerp; but they were so very inaccurate that Dr. Bree was misled by them into the error of treating this bird as being distinct from *Aquila rapax*; and he consequently gave it the name of *Aquila culleni*. In September 1876 Mr. Gurney visited Antwerp; and having carefully examined this bird, he assures me that it is nothing but *Aquila rapax*. In order to have an accurate drawing of it, I sent Mr. Keulemans over to Antwerp, to make paintings of it, from which he has drawn the Plate herewith given.

According to Canon Tristram (Ibis, 1865, p. 252), "the Tawny Eagle is much more common throughout the year than *Aquila nævia*, and is much bolder and more familiar in its habits. It almost deserves the name of the parasitic Eagle, from the unscrupulous way in which it pursues and robs lesser birds of prey of their booty. It is more abundant in the maritime plains and in the inhabited central country than in the east or south. One nest only rewarded our search. This was in April, on the north side of Mount Carmel. We frequently noticed the Tawny Eagle in the neighbourhood of Damascus and in Cœle Syria, to which region many of the species seem to retire for nidification in the spring. A young nestling was brought to me in April at Jericho, and another at Jerusalem a fortnight later."

Whether true *Aquila rapax* is found in North-eastern Africa or not I cannot say, but think it probable that it is. The Abyssinian form is much paler than *Aquila rapax* from South Africa, and appears to be fairly separable.

Some very interesting and important notes on *Aquila rapax* and its allies are published by Mr. J. H. Gurney (Ibis, 1877, pp. 224–236), to which I may refer my readers. I quite agree with Mr. Gurney that *Aquila albicans*, Rüpp. (Neue Wirbelth. p. 34, pl. 13, 1835), can quite fairly be kept separate as a distinct form; but I scarcely think that the Algerian and North-west African form can be separated from the South-African bird, although so few examples from North-west Africa are to be found in collections, that it is impossible to give a decided opinion.

In Algeria the Tawny Eagle is said to be tolerably common, though specimens from there are very rare in collections. Mr. O. Salvin writes (Ibis, 1859, p. 181), "I several times had opportunities of observing a pair of these birds about a cliff which faces the south in the vicinity of Kef Laks. About the fourth week in April I discovered the nest, to which I sent Mohamed, but without result; the eggs had not been deposited. At Djendeli, in the Salt-lake district, I obtained a specimen. This bird, the skin of which I have still, seemed to have missed its moult, as the plumage was very much faded. So light-coloured is it, that it may bear comparison with the figure of *Aquila belisarius* given in Levaillant's 'Exploration Scientifique d'Algérie,' which, there is no doubt, is referable to this species. A few of the dark feathers of the fresh moult just show themselves. On dissection, the sex was not to be traced. While staying at the same place a young bird just beginning to change its down for feathers was brought to us. This we took from place to place, and eventually deposited it in the Gardens of the Zoological Society of London, where it may now be seen." M. Favier obtained this Eagle at Tangier; and Lord Lilford, who has received examples from Mogador, says that it is of frequent occurrence in Tunis. It has more than once been sent from Senegal; and, according to Mr. Andersson (B. of Damara Land, p. 6), "the Tawny Eagle is not uncommon in Damara Land and Great Namaqua Land. It perches usually on the topmost branches of lofty trees, often remaining stationary for hours together; it builds on the top of high, and generally inaccessible trees, and constructs a large nest of dry sticks. It is very destructive to the young of diminutive antelopes, and to hares, Bustards, and Plovers; but it also feeds largely (and, I fancy, by choice) on carrion, besides which it devours fish, frogs, and earthworms; it pursues and plunders other less powerful birds of prey, and also robs the sportsman of wounded game." It has been recorded from the Mossamedes district, in Benguela, and, Mr. Layard says, is the commonest Eagle in the Cape-of-Good-Hope colony, whence it extends its range in a north-easterly direction to the Transvaal.

So far as I can ascertain, the present species does not appear to range further east than Palestine, and in Asia is replaced by *Aquila vindhiana*, Frankl. (P. Z. S. 1831, p. 114).

Respecting the habits and nidification of this Eagle I find but little on record beyond what is cited above. Von Heuglin, speaking of the Tawny Eagle found by him in North-east Africa, says (Orn. N.O.-Afr. i. p. 46), "This Eagle is a resident, leaving its quarters and straggling about in the late autumn and winter, being probably driven by want of food to leave its regular haunts and wander about to the camps, inhabited places, and the lower plains. It is more companionable than its allies, and is less bold, being frequently found on carrion in company with the Vultures and Ravens. In general it is not shy, and feeds principally on the smaller mammals. It commences nidification at the commencement of the summer-rain season, and places its nest on high trees such as acacias, zizyphus, and in Abyssinia sometimes in junipers. The nest is tolerably large, and is constructed of dry twigs and branches; and we saw more than one on the same tree on several occasions. This Eagle is not particular as to the place it selects for nidification, and will breed in lonely forests, near farm-buildings, and churches; and it uses the same nest several years in succession. Even out of the breeding-season this Eagle may be found sitting on its nest. In Abyssinia we found tenanted nests in May, June, and August; and Vierthaler found one on the Upper Blue Nile in January, which contained a young bird in down, several dead rats, and a domestic cat."

In my collection are several eggs of this Eagle from Algeria and South Africa, which are white, blotched and spotted with pale purplish red and deep rufous, some being but slightly marked, and others being almost as richly blotched as ordinary eggs of the Golden Eagle. In size they vary from $2\frac{26}{40}$ by $2\frac{9}{40}$ to $2\frac{36}{40}$ by $2\frac{8}{40}$ inches.

The specimen figured is the one now alive in the Zoological Gardens at Antwerp.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. South Africa.

E Mus. Norv.

a, ♀ *ad.* S. Africa. *b, c, jun.* Natal (*Ayres*). *d, ad.* Mogador (*Lord Lilford*).

E Mus. Brit. Reg.

a, ♂. Snowberg, S. Africa. *b*, ♀. S. Africa (*Sir A. Smith*). *c*, ♂. S. Africa. *d*, ♂. Senegal. *e*, ♀. Tangier (*Favier*). *f*, ♀. Djendeli, Eastern Atlas (*O. Salvin*).

E Mus. H. B. Tristram.

a, ♂. Damara Land (*Andersson*).

E Mus. E. Hargitt.

a. S. Africa.



WHITE-SHOULDERED EAGLE.

ADL. & IMM. BIRD.



AQUILA ADALBERTI.
(JUV)

AQUILA MOGILNIK.
(JUV.)

AQUILA ADALBERTI.

(WHITE-SHOULDERED EAGLE.)

Aquila adalberti major, L. Brehm, Ber. Vers. deutsch. Orn. Gesellsch. xiii., Beit. vii. p. 55 (1860).
Aquila adalberti minor, Br. tom. cit. p. 55 (1860).
Aquila heliaca, Barboza du Bocage, Instruc. Prat. p. 76 (1862, nec Savigny).
Aquila leucolena, Dresser, P. Z. S. p. 864 (1872).
Aquila imperialis, auctt. (nec Bechstein).

Aguila imperial, *Aguila real*, Spanish; *Aguia imperial*, Portuguese.

♀ *ad.* fronte et sincipite saturatè umbrinis, pileo antico et nuchâ pallidè arenario-isabellinis, dorso et uropygio nigricanti-umbrinis, supracaudalibus angustè griseo-albo terminatis; rectricibus pallidè griseis, umbrino marmoratis, ad apicem umbrinis angustè griseo terminatis: remigibus saturatè brunneis, secundariis extùs indistinctè fulvido lavatis, tectricibus alarum minimis usque ad dorsum conspicuè niveis, scapularibus dorso concoloribus: subtùs saturatè umbrina: facie pallidè isabellinâ plus minusve rufescente lavatâ: subcaudalibus fulvidis griseo terminatis: tarsi plumis umbrino et albido immixtis: subtectricibus alarum fulvidis, campterii plumis plus minusve niveis: rostro nigricanti-corneo: cerâ pallidè flavidâ: iride pallidè griseo-fulvâ: pedibus flavis, unguibus nigricanti-corneis.

♂ *ad.* fœminæ similis, sed paullo minor.

♂ *juv.* suprà et subtùs sordidè arenarius lætè ferrugineo lavatus: uropygio et supracaudalibus pallidioribus: rectricibus sordidè arenariis angustè rufescenti-brunneo marginatis et terminatis: remigibus fuscis: secundariis sordidioribus, in pogonio externo vix isabellino-flavicante lavatis et apicatis: tectricibus alarum dorso concoloribus.

Juv. (paullo senior) præcedenti similis sed omnino nigro-fusco lentiginosus: plumis carpalibus plus minusve niveis: tectricibus alarum fusco et sordidè arenario immixtis.

Adult Female (Coto del Rey, Seville, March). Forehead and crown dark umber-brown, gradually merging into dull light sandy brown, which latter colour pervades the entire nape; back dark umber-brown; upper tail-coverts also dark brown, slightly tipped with dirty white; tail light grey, marbled with brown, the terminal third being plain unspotted umber-brown, narrowly tipped with dull grey; quills dark umber-brown; secondaries indistinctly washed on the outer web with dull dark earth-brown; along the whole edge of the wing a very broad band of pure white feathers, forming, when the wing is closed, a most conspicuous white patch, nearly joining on the back; scapulars dark brown, like the back; sides of the face and neck light sandy brown, here and there tinged with rufous; throat and underparts generally dark umber-brown; under tail-coverts dirty earth-brown, slightly tipped with dull grey; feathers on the tarsus dark brown and pure white mixed; under wing-coverts dark brown; the feathers on the edge of the wing pure white, intermixed with dark brown; bill dark horn; cere and edge of the gape wax-yellow; iris light brownish grey; feet yellow; claws dark horn-blue. Total length 33 inches, culmen 3·1, height of bill at base 1·25, wing 24·4, tail 13·8, tarsus 4·15, centre toe without claw 2·45.

Adult Male. Similar in plumage, but measures:—Total length 29 inches, culmen 2·8, height of bill at base 1·2, wing 23·3, tail 12, tarsus 3·8, centre toe without claw 2·2.

Young Male. Head, neck, back, scapulars, and wing-coverts light sandy brown, here and there intermixed with darker brown and dull rufous feathers; rump and upper tail-coverts pale creamy rufous; tail sandy grey, edged and tipped with pale rufous brown; primaries dark brown; secondaries dull brown, edged and tipped with creamy yellow; underparts generally dull uniform sandy brown, tinged with rufous; under tail- and wing-coverts pale creamy rufous.

The wing- and tail-feathers in this specimen are considerably abraded, and show that they have been worn some time. A very young specimen, sent home alive by Lord Lilford, was much more uniform in colour, the plumage in general being dull creamy sand-colour, washed with rufous.

Another young bird, from the collection of Lord Lilford, resembles the one he sent over alive, except that that the entire plumage appears faded to an extremely pale sandy colour, there being no trace of rufous whatever in the plumage. It appears that the first plumage is uniform rufous sandy brown, which, after being worn some time, gets much faded. From this the bird gradually assumes the adult plumage, being in the intermediate stage party-coloured.

Young Female assuming the mature plumage (near Seville, October 1869). Head and nape as in the adult; back, rump, and upper tail-coverts as in the younger bird above described, but here and there marked with large blotches of dark umber-brown, many of the feathers having one web or the terminal portion dark brown; tail as in the younger bird, except that a single feather of the adult plumage is pushing forward; quills as in the younger bird; wing-coverts, about half of them the young plumage, the remainder being the dark feathers of the adult bird; many of the feathers along the upper edge of the wing pure white; underparts as in the young bird, but here and there with large blotches of dark umber-brown.

This Eagle, so distinct from the Imperial Eagle of Eastern Europe, both in the fully adult and also in the young plumages, was first described as a distinct species by Dr. Ludwig Brehm, at the meeting of the German Ornithological Society held at Stuttgart in 1860, from specimens sent by his son, Dr. Reinhold Brehm, from Spain, and by the latter referred to as a distinct species, for which he proposed the name of *Aq. adalberti*, after his patron, Prince Adalbert of Prussia. All the examples, three in number, obtained by Mr. R. Brehm, were in the immature plumage, and were then by many naturalists supposed to be referable, not to a new species, but to the Tawny Eagle of Africa; and until quite lately, when specimens in all stages of plumage were obtained by Lord Lilford, Major Irby, and Mr. Howard Saunders in Spain, Brehm's name was placed amongst the numerous synonyms of the Tawny Eagle. When, in December 1872, I exhibited at a meeting of the Zoological Society a large series of Imperial Eagles, and pointed out that the Imperial Eagle of Spain really was distinct from the eastern bird, I myself was in doubt as to whether Brehm's name would stand for this species, and proposed to call it *Aquila leucolena*, from its conspicuous white shoulders; but having since then carefully compared Brehm's descriptions with a large series of specimens, in various stages of plumage, I have come to the conclusion that his birds must be referable to the present species, and his name will therefore stand. I think it probable that, had he been fortunate enough to possess as large a series from Spain as I now have before me, he would have made the synonymy of this bird considerably more voluminous than it now is; for scarcely two specimens are alike. At present the White-shouldered Eagle is only known from Spain, Portugal, and North-western Africa; but it is

possible that it may extend further eastward into the south of France, though the specimen figured by Jaubert and Barthélemy-Lapommeraye from the south of France is certainly *Aq. mogilnik* and not the present species.

All the information I have been able to collect respecting the present species is but comparatively meagre. I myself saw it once when in Spain; but not having visited the localities where it is generally found, I can say nothing respecting its habits. All the specimens I have seen, excepting two procured for me from near Madrid by Manuel de la Torre, were obtained by or through Lord Lilford, Major Irby, and Mr. Howard Saunders. The first-named of these gentlemen informs me that "this Eagle is very common in the plains of Andalucia, especially in the wild country lying to the south-west of Seville, on the right bank of the Guadalquivir, where I have often met with it. It is essentially a bird of the plains; I have never met with it nor heard of its occurrence in the mountains. Its food seems to consist chiefly of rabbits. The nest, a huge structure of sticks, lined with coarse grass, and occasionally a little fur and hair, generally placed at the top of a tree, often not more than twenty or thirty feet from the ground, and sometimes in an isolated cork tree, is not difficult to find. Last year two clutches of eggs were brought to me in Seville from the Coto del Rey, on the 24th of March, taken two days previously, with a male and female bird in fine adult plumage; one nest contained three, and the other two eggs, all quite fresh, and rather more spotted and blotched with pale rufous than usual. In the first fortnight of May of the same year (1872), we found four more nests of this species in the Coto de Doñana, two of which contained two, and the others three young birds respectively. It seems that this species does not nest till it attains the full adult plumage, which is not, I think, till its fourth or fifth year, as three now alive in my possession, which we took from a nest in the Coto del Rey in April 1869, have by no means fully attained it as yet (April 1873), though they have moulted regularly and fully every year. I have seldom myself met with this species in immature plumage in Spain, though I have obtained several specimens from Seville and Madrid in that state. We fed six of the young birds above mentioned in the Coto de Doñana by plundering a nest near the shooting-lodge at Las Marismillas, in which we daily found a young rabbit or two, and on one occasion a large rat. In fine weather the old birds soar in circles at a great height, uttering now and then a short, hoarse bark."

Major Irby informs me that it is "resident in Spain, and common in the vicinity of Gibraltar, though by no means so numerous as near Cordova and Seville;" and Mr. Howard Saunders writes as follows:—"*Aguila real* is the usual name near Seville, where it is tolerably abundant, nesting in the trees of the Cotos del Rey and Doñana. The habitat of this species appears to be restricted to the wooded plains watered by the principal rivers of Southern and Central Spain. I do not remember to have met with it alive or seen it in any local museum to the north of Madrid; nor, so far as I am aware, does it occur in the provinces of Granada, Murcia, Valencia, or Cataluña; indeed it is the only species of Spanish Eagle which has never been sent to me from the neighbourhood of Granada. It frequents the whole of the wooded and flat portion of the valley of the Guadalquivir, and the tributaries of that river above Cordova, and is also found at the head waters of the Guadiana, near Daymiel, and probably throughout the whole course of that river to the frontiers of Portugal. It again occurs on the Tagus and Jarama in suitable localities; but north of that I lost sight of it, nor could I learn any thing

about it on the portions of the Ebro which I have visited, and strongly suspect that the Guadarrama range is about its northern limit, except as a straggler. It is, however, not a bird that wanders much, and I have no doubt that the specimens obtained near Madrid came from and were bred in the Tagus valley."

I have not been able to examine specimens of the Imperial Eagle from Portugal; but it is doubtless the present species that Professor Barboza du Bocage records, under the name of *Aquila heliaca*, as being found in the sierras of Alemtejo, Villa Viçosa, and Borba. With respect to its occurrence in Africa, Major Irby writes to me that "it has been obtained near Tangier by Favier, in adult plumage, as he describes the white shoulders of a specimen. I have myself seen the immature birds in Morocco."

I do not possess the eggs of this Eagle, but have examined several in the collections of Mr. Howard Saunders and Mr. H. Seebohm, which do not in any way differ from those of *Aquila mogilnik*.

The specimens figured on one Plate are, a magnificent adult female, obtained near Seville in March, and a young female just changing from the young into the adult plumage, both being in the collection of Lord Lilford; and on the other Plate I have figured, together with the young of *Aquila mogilnik*, so as to show the difference, one of the young birds sent over alive by Lord Lilford, of which Mr. Keulemans took a careful painting directly it arrived in England. These are also the specimens described, excepting the young male, which is in my own collection, and was shot, together with another in the same stage of plumage, close to Madrid, by Manuel de la Torre.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *juv.* Madrid, winter of 1866–67 (*Manuel de la Torre*). *b*, ♂ *jun.* Seville, November 13th, 1870 (*Sanchez*). *c*, ♀ *ad.* Seville, October 24th, 1870.

E Mus. Lord Lilford.

a, ♀ *ad.* Coto del Rey, Seville, March 23rd, 1872 (*L.*). *b*, ♂ *ad.* Coto del Rey, May 1869 (*L.*). *c*, ♀ *jun.* Seville, October 1869. *d*, *juv.* Madrid, 1865. *e*, ♂ *juv.* Cotos, Seville, February 16th, 1870. *f*, *juv.* Seville (*Sanchez*).

E Mus. Salvin and Godman.

a, *juv.* Madrid, winter of 1866–67 (*Manuel de la Torre*).

E Mus. Howard Saunders.

a, ♀ *ad.* Coto del Rey, October 29th, 1869; *b*, ♀ *ad.* Coto del Rey, April 12th, 1872, shot from nest (*Sanchez*).



IMPERIAL EAGLE

AQUILA MOGILNIK

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AQUILA MOGILNIK.

(IMPERIAL EAGLE.)

Falco mogilnik, S. G. Gmel. Nov. Com. Petrop. xv. p. 445 (1771).
Falco melanœetus, Gm. Syst. Nat. i. p. 254 (1788).
Aquila chrysaetos, Leisl. Wett. Ann. ii. p. 170 (nec Linn., 1809).
Aquila heliaca, Savig. Ois. d'Egypte, p. 82 (1810).
Falco imperialis, Bechst. Orn. Taschenb. p. 553 (1812).
Aquila imperialis (Bechst.), Keys. & Blas. Wirbelth. p. 40 (1840).
Aquila riparia, Pr. Würt. Icon. ined. no. 4 (1840).

Aigle Impérial, French; *Kaisers Adler*, German; *Mogilnik*, *Karagousch*, Russian.

Figuræ notabiles.

S. G. Gmel. tom. cit. pl. 11 B; Savigny, tom. cit. pl. xii.; Susemihl. Vög. Eur. pl. 14, *ad.*; Naumann, Vög. Deutschl. pl. 6, *ad.*, pl. 7, *juv.*, pl. 340. fig. 1 (fig. 2?); Werner, Atlas, *Rapaces*, pl. 14; Gould, B. of Eur. pl. 5; Bree, B. of Eur. pl.

♂ *ad.* nigricanti-umbrinus: capite summo nuchâque saturatè arenario-isabellinis, hâc vix rufescente lavatâ: fronte saturatè umbrinâ: uropygio paullò rufescente notato: caudâ saturatè griseâ, brunneo marmoratâ, ad apicem nigricanti-brunneâ, vix albido terminatâ: remigibus nigricantibus, tectricibus alarum scapularibusque concoloribus, ex his quibusdam conspicuè niveis: subtùs nigricanti-umbrinus, subcaudalibus crissoque pallidè brunneis: rostro cærulescenti-corneo: cerâ pedibusque flavis, unguibus nigricantibus: iride pallidè griseo-fulvâ.

Juv. ochrascenti-albidus, striatus: dorso pallidè fusco, plumis omnibus medialiter flavicanti-arenariis: dorso imo, uropygio supracaudalibusque vix rufescente lavatis, his flavicante albido terminatis: rectricibus saturatè fulvis, vix pallidè brunneo apicatis: remigibus nigricantibus, secundariis conspicuè flavicante albo terminatis: tectricibus alarum majoribus fulvis, saturatè albido apicatis, tectricibus minimis scapularibusque dorso concoloribus: gulâ guttureque flavicanti-arenariis: pectore et abdomine ochrascenti-albidis, striatis, plumis omnibus fulvido marginatis: tibiis et tarsi plumis, crisso subcaudalibusque ochrascenti-albidis immaculatis: rostro, cerâ pedibusque ut in adulto coloratis.

Adult Male (Bulgaria, April 1866). Blackish brown; head and neck above dull creamy yellow; forehead strongly marked with dark brown; nape dull rufous yellowish; rump intermixed with lighter brown feathers; tail dark grey marked with brown, having a broad terminal blackish brown band, and finally narrowly tipped with light brown; quills and wing-coverts dark blackish brown; the feathers on the edge of the wing lighter brown; some of the scapulars pure white, others dark brown; under tail-coverts lighter brown than the rest of the underparts; beak bluish, darker at tip; cere and legs pale yellow; iris brownish yellow. Total length 31 inches, culmen 2·85, wing 23·5, tail 11·6, tarsus 3·9.

Young. Head and neck pale brownish yellow, or honey-brown, every feather margined with dark earth-brown, giving it a striated appearance; back and scapulars dull earth-brown, the feathers having the

central portion yellowish brown; lower part of the back, rump, and upper tail-coverts washed with rufous here and there, the latter having the terminal portion dull yellowish white; tail dark brown, tipped with dull light brown; quills blackish brown; secondaries broadly tipped with dirty yellowish white; larger wing-coverts dark brown, tipped with dirty white; smaller coverts similar to the back; chin and throat sandy yellow, unstriped; breast and underparts generally (excepting the thighs, tarsi, and under tail-coverts, which are pale, unstriped, yellowish buff) pale yellowish buff or honey-yellow, every feather edged with dark brown, giving a very distinct striated appearance; soft parts as in the adult.

Obs. For long no little confusion has existed regarding the various stages of plumage which the Eagles undergo; and as yet very little is known respecting the immature dress of several species. *Aquila mogilnik* is, when first hatched, covered with snow-white down, from which it passes into a plumage similar to the young bird last described, but darker. Dr. E. Eversmann (Cab. Journ. i. p. 59) brought up young birds, to watch their changes of plumage, and states that its first feather-plumage resembles very closely that of the bird figured by Naumann, but is darker, and not so red. I have before me a specimen collected by Canon Tristram at Lebanon, evidently a very young bird, and considerably darker than any other example I have examined; and I surmise that this is the first stage referred to by Dr. Eversmann. From this it passes, probably not by moult, but merely by fading of the colours of the feathers into the pale honey-brown striated stage. Between this last and the dark blackish brown mature plumage there is one stage in which it resembles the immature *Aq. adalberti*, but may readily be distinguished by the total absence of any white on the edge of the wing. In this stage it is dull reddish or earthy brown, blotched all over with blackish brown, and in most specimens the tail and head have to some extent assumed the fully adult dress. How long it takes the bird to pass through all stages of plumage from the down to the fully adult dress I cannot state with certainty, but think that it will be found to be about four years.

Messrs. Brooks and Anderson sent over to me some time ago a very large series of Indian Eagles to prove that *Aq. bifasciata* and *Aq. mogilnik* (the latter called by them *Aq. crassipes*) are distinct; and I have made use of these specimens, which are now in the Norwich Museum, both in the preparation of the present article and also in demonstrating, in December 1872 (*vide* P. Z. S. 1872, p. 863), that the Indian and East-European Imperial Eagles are the same, and that the Spanish Imperial Eagle is a distinct and clearly recognizable species. In this Indian series are five specimens of *Aquila mogilnik*, numbered by Mr. Brooks according to the order in which he considers they should come, beginning at the youngest. Of these, no. 1 is in the first or striped plumage, with the light tips to the secondaries, and plain unstriped lighter-coloured tail, tipped with dull dirty buff, and having dirty yellowish tail-coverts. No. 2 has blotches of black all over the underparts, and resembles *Aq. adalberti* in the same stage of plumage; the centre tail-feathers are slightly marbled and much abraded and worn; and fresh blackish brown feathers are showing here and there on the back. No. 3 has the entire plumage much darker and the head lighter; the quills are blackish brown; and the tail is as in the fully adult bird, except that it is slightly tipped with dirty white. No. 4 is in the adult plumage, except that there is no appearance of the white feathers on the scapulars. No. 5 is a fully adult bird, and, excepting one which Baron von Hügel has kindly forwarded for examination, which it very closely resembles, is the finest specimen I have ever had an opportunity of handling. It has the head and nape creamy yellow, marked with pale rusty yellow; back, wings, and entire underparts nearly black; scapulars chiefly pure white; on the edge of the carpus the feathers are narrowly margined with dirty brownish yellow, but there is no sign of any white feathers; the upper tail-coverts are narrowly tipped with dull light brown; the basal portion of the tail is grey, marbled with blackish brown, the terminal third being nearly black. The bird sent by Baron von Hügel so closely resembles this specimen that I need give no description of it.

The immature bird above described (no. 1) resembles very closely, indeed, the young male from the Dobrudscha, being in precisely the same stage of plumage. On the label of this specimen is a note to the effect that it was sent by Dr. Cullen, who states that it was trapped on its nest—which was placed on the ground at the foot of a rock, and contained two eggs. I think, however, with all deference to Dr. Cullen, that some error must exist; for in the first place I greatly doubt if the Imperial Eagle ever breeds in this, the first stage of plumage, and then it has, to my knowledge, never been known to place its nest on the ground. Dr. Bree, through whom the bird was sent, and who possesses the two eggs, has most kindly given me all the information he received with them, from which it appears that Dr. Cullen did not himself take the bird and eggs, but they were obtained for him by his Tartar servant, which may account for the statement, these natives being seldom altogether trustworthy. The following is a table of measurements of thirteen specimens of this Eagle examined by me; and I may remark that the specimen in Canon Tristram's collection had the beak and tarsus damaged. This gentleman's three other birds I unfortunately returned without having kept any record of their measurements:—

	Sex.	Locality.	Culmen.	Height of bill at base.	Wing.	Tail.	Tarsus.	Middle toe without claw.
			inches.	inch.	inches.	inches.	inches.	inches.
Mus. H. E. D.	Spec. *a*, ♂ ad.	Bulgaria.	2·85	1·2	23·5	11·6	3·9	2·2
„ „	„ *b*, ♂ ad.	India.	2·7	1·2	22·7	12·0	3·5	2·3
„ Norv.	„ *a*, ♂ juv.	No. 1. India.	2·7	1·25	24·0	13·0	3·5	2·2
„ „	„ *b*, ♂ ad.	„ 3. do.	2·8	1·25	22·0	12·4	3·5	2·0
„ „	„ *c*, ♀.	„ 2. do.	2·85	1·25	23·0	12·5	3·5	2·2
„ „	„ *d*, ♀.	„ 4. do.	2·9	1·25	23·0	12·5	3·6	2·5
„ „	„ *e*, ♀ ad.	„ 5. do.	2·9	1·25	24·0	13·5	3·6	2·3
„ „	„ *f*, ♂ juv.	Dobrudscha.	2·75	1·25	23·7	13·0	3·8	2·35
„ Walden	„ *a*, ♂ ad.	Abyssinia.	2·7	1·2	22·5	12·0	3·7	2·1
„ Lilford	„ *a*, juv.	India?	2·8	1·25	23·0	12·5	3·4	2·3
„ Hügel	„ *a*, ♂ ad.	Hungary.	2·75	1·2	22·5	11·6	4·0	2·2
„ Buckley	„ *a*, juv.	Macedonia.	2·8	1·2	22·5	11·6	3·6	2·0
„ Tristram	„ *a*, juv.	Lebanon.	. .	1·2	23·5	12·7	. .	2·15

This, the eastern of the two species which have been hitherto confused together under the name of Imperial Eagle, is found throughout Southern Europe, except on the Iberian peninsula, in Northern Africa, and eastward extending throughout India into China. It has not yet been met with in Great Britain, Scandinavia, or Northern Russia; but Tyzenhaus states that it has occurred in Lithuania. It is only a very rare straggler to Northern Germany. Mr. W. Lühder observed a pair in Pomerania, near Greifswald, in the month of April, and supposed that they may have bred there; but I scarcely think that this could have been the case, as it does not breed in Europe, excepting in the southern portions of the continent. A specimen obtained in Pomerania is said to be in the Königsberg Museum; and Gloger records it as having been procured near Breslau. In Southern France, according to Jaubert and Barthélemy-Lapommeraye, it has occurred several times; and on referring to the plate of the bird in the work published by those gentlemen, there appears no doubt that the species is the present one, and not the White-shouldered or Spanish Imperial Eagle. Salvadori doubts the fact of its ever having occurred in Italy, or on any of the islands, and states that he has never been able to find a single native specimen in any Italian

collection. Mr. C. A. Wright records, on the authority of Signor Schembri, one instance of its occurrence on Malta; but he himself never saw it there.

In Greece and on the Ionian islands it is of not uncommon occurrence; and Lord Lilford writes that it is "not rare in winter on the coasts of Epirus. I have often observed it near Butrinto, and on the 18th of January, 1857, picked up a very fine specimen, dying from wounds, on the banks of the Butrinto river. A friend found another dead in the winter of 1858, in the great marsh between Santa Quaranta and Delvino, in Epirus, about twenty miles north of Corfu. The Corfu bird-preserver assured me that this species breeds in the precipices of San Salvador, in the island of Corfu. I have seen an individual of this species seize and carry off a Golden-eye (*Anas clangula*) which had been wounded a few minutes previously by one of our party whilst woodcock-shooting near Butrinto. This is a much less wary species than *Aquila chrysaëtos*, and will often allow one to approach within gunshot when perched on a tree looking out for wildfowl, which seem to form its principal food in Albania."

Dr. Krüper, writing respecting its occurrence in Greece, states that "the natives give it the same name as that used for the Golden Eagle (ἀετός). How far it extends throughout Greece I cannot say. It frequents the plains, not occurring in the mountains of Greece. As yet I know only of two breeding-places, one near Dragmana, where the nest was on a huge plane tree, and the second in the wood near the lake of Vrachori, in Akarnania." In both these nests, Dr. Krüper continues, "numbers of Sparrows had built their nests in the interstices between the large boughs forming the foundation of the nest. Some years previously Mr. Schrader took two young birds out of the latter nest and reared them, feeding them on tortoises."

In Southern Austria, Hungary, and the countries skirting the Danube it is by no means very rare. The Ritter von Tschusi Schmidhofen informs me that "a pair nested on the Lobau, near Vienna, in 1811, and both old and young birds were procured, and are now in the Vienna Museum. Near Salzburg it is rare; one was obtained in the Lueg Pass in 1859. In Moravia one is recorded by Heinrich as having been procured near Solkonitz in 1854, and another in 1856. Althammer speaks of it as a rare species in the Tyrol, and he knows but of two specimens killed there. In Siebenbürgen it is not rare, and in Hungary, in the Banat, neither rare nor common. Zelebor obtained a female on the Zitter Militair-Grenze in May 1863, and two nestlings at Titel in 1853, all three of which are now in the Vienna Museum."

I met with it in Lower Hungary, Servia, and Bulgaria, in some localities quite common; but although I found several nests, I was too early for the eggs. I persuaded a friend (Mr. C. Farman), whose acquaintance I had made when travelling on the Danube, to take up ornithology; and he was afterwards successful in obtaining many eggs of this species as well as of other Raptores, and published some excellent notes on the birds of prey of Bulgaria in 'The Ibis.' He records this Eagle as by far the most common species in Central Bulgaria, where great numbers breed. Messrs. Elwes and Buckley subsequently visited the same locality in Bulgaria from which Mr. Farman obtained the eggs of this Eagle; and I also transcribe below their notes on its nidification. They record it as being "surprisingly common" throughout Macedonia and Bulgaria, and essentially a frequenter of the plains. As regards its range in Russia, Mr. Sabanäeff informs me that it is met with as far north as Ekaterinburg, where, according to M. Martin, it has been met with breeding; and M. Sabanäeff himself confirms this, as he found it breeding in

that district, in 57° N. lat. Professor Bogdanoff records it from the Government of Simbirsk, and Severtzoff from that of Voronege. "Everywhere," Mr. Sabanäeff writes, "it is a steppe bird, and does not frequent the true mountains, though occurring on the so-called mountain-steppes and the commencement of the hill-ranges." Eversmann writes that it belongs rather to Southern than Northern Russia, being "common in the Southern Ural, much more so than the Golden Eagle. It is also found in the Southern Altai and the adjacent steppes. Further north, as, for instance, at Kazan, it does not occur; but there again the Golden Eagle is not uncommon. It breeds in the vicinity of villages, building its nest on lofty poplars, aspen, or willow trees." There is no doubt as to the Eagle referred to by Eversmann being the present species, as he speaks of the white scapular feathers. Dr. Radde obtained it on the Sea of Azoff. Mr. Goebel, however, finds it rare in Uman, where it arrives late in April, and has been observed up to the end of September. Dr. Krüper obtained many specimens of the bird, in various stages of plumage, and a few eggs in Asia Minor. He informs me that he has "often observed this Eagle there. Last year Mr. Schrader and I found an Eagle's nest in a pine-wood above Burnova, which I believed was untenanted, as we saw no Eagle near; a lot of bones and tortoise-shells were strewn on the ground under the tree. On the 9th of April, however, I saw the bird fly off, and could distinguish that it was an Imperial Eagle; and on the 30th I went to take the eggs, but found only three young ones, just hatched, all covered with snow-white down, the smallest of which I took and brought away with me." In a letter received from Dr. Krüper this last winter, he says that this Eagle breeds but rarely near Smyrna, and he knows but of one breeding-locality, in the pine-forest above Burnabat, and expects to take the eggs out of this eyry next April.

Canon Tristram, writing on the ornithology of Palestine, says:—"We frequently saw the Imperial Eagle. On one occasion, in the early morning, in the valley of Dothan, a bird slowly passed close to us, the most magnificent specimen I ever saw, with its white scapulars splendidly distinct. We did not succeed in finding its nest; but it remains throughout the year. I had a specimen given me in Beyrout in the immature plumage."

In North-eastern Africa it is tolerably common. Brehm met with it at Lake Menzalah, in the Delta of the Nile; and Captain Shelley states that it is "not uncommon in Lower Egypt during the cooler months; but it is rarely met with on the Nile above Cairo, and in Nubia appears only as an occasional straggler."

How far it ranges into Africa I cannot say; but I have examined a very fine specimen obtained by Mr. Jesse in Abyssinia, and now in Lord Walden's collection. Nor is it possible to say where it meets with its close relation, *Aquila adalberti*, in Western Africa, as hitherto these two species have been confounded together.

To the eastward, however, the Imperial Eagle has a very extensive range, being found throughout India and Southern Siberia to China. Up to the present year, or nearly thus late, the Indian authors have confused two very distinct species of Eagles, *Aquila bifasciata*, Gray, and the present species, considering that they were both referable to the Imperial Eagle, being the same bird in different stages of plumage. Thanks, however, to the careful and unwearied researches made by Messrs. W. E. Brooks and A. Anderson, this question has now been set at rest, so far as any Eagle-question can be said to be settled; for certainly all ornithologists will agree with

me that there is no more difficult group of birds. I purpose ere long giving a review of all species of true Eagles found within the limits of the Palæarctic region, and trust that all ornithologists will cooperate with me in my endeavours to bring this family into something like order. The confusion that has existed makes it most difficult to ascertain the exact range of the present species. It is certainly found in South-eastern Siberia, as Radde obtained a young female at the Tarei-nor; but the other Siberian travellers do not appear to have met with it. It occurs in India; and Dr. Jerdon writes that "the Imperial Eagle is rare in the south of India, but not uncommon in the tableland and in Central India, and is also found throughout the Himalayas. It prefers the neighbourhood of hills and the bare open country, or thin and low jungle. It may frequently be seen seated on the ground, or on a stone on the top of a low hill, till an hour or two after sunrise, when it rises, apparently unwillingly, and takes a quest after game at no great elevation, hunting slowly over the bushy valleys and ravines, and occasionally over cultivated ground. If unsuccessful in its search, it reseats itself, and after an interval again takes wing, and this time soars to a great height, circling slowly in the air, traversing a large extent of country." Captain Beavan met with and procured it at Umballah, in November; and Captain Tytler records what I take to be this species as observed between Simla and Mussoorie. Mr. R. Swinhoe obtained it in China, near Foochow, at the close of 1861; and writing to the editor of 'The Ibis' from Takow, Formosa, 27th February, 1863, he states as follows:—"The other day halfway up Asses' Hill, on a white patch caused by a heavy landslip, I observed what I took to be a black tree-stump; but a shining white spot on it excited my wonderment. As we ascended the mass of coralliferous débris, the stump-like object took wing and slowly flapped away amid the hoots and grunts of several monkeys that were sporting on the hill-side. I then saw that it was an adult Imperial Eagle (*Aquila heliaca*), the white spot being one of the conspicuous shoulder-patches this bird carries in the mature plumage."

So far as my own experience goes, I have found the Imperial Eagle by no means a royal bird, but partaking far more of the Buzzard than the Falcon in its habits. Those I met with in Bulgaria appeared to be hunting after small game; and they certainly met together wherever any carcass was, although they could, without much trouble, have obtained a sufficient supply of live game. I do not say that its habits are always such, but am certainly inclined to agree with Mr. A. O. Hume, who, writing on the habits of this Eagle in India, says:—"Much has been written about the daring and fierceness of this species: I can only say that in India (where possibly the climate is subversive of courage) I have never seen the slightest indications of these qualities; I have driven the female off hard-set eggs, and plundered the nest before the eyes of the pair, without either flapping a pinion, even to defend, what even a little Shrike will swoop at once to save. I have seen a couple of Crows thrash one of them soundly; and, whether it be that familiarity breeds contempt, I am bound to record that, after having seen many hundreds, and shot, I dare say, a good hundred myself (I killed seven one *morning* in the Etawah district), I look upon the 'Königs Adler' as no better than a great hulking Kite. As a rule, this species is, with us, an ignoble feeder. I have generally found them gorged with carrion; after a good meal they will sit stupidly on a tree, or any little mud pillar, and permit you to walk within twenty yards of them; but before feeding they are somewhat wary, and can by no means always be secured, even when seen sitting. On more than one occasion I have found Desert-Rats

(*Gerbillus erythrourus*) in their crops; and I once shot one of a pair, which were busy on the line of rail at Etawah, devouring a Bandicoot Rat (*Mus bandicota*) which some passing train had cut in two. Occasionally, but rarely, I have found that they had eaten Quails and other birds! Once I shot a male, which was dancing about on the ground in such an astounding fashion, that I killed it to see what the matter was. The bird proved to have been choking. It had swallowed a whole, *dry* shin-bone and foot of an Antelope; the bone apparently could not be got down altogether; and in trying to void it the sharp points of the hoof had stuck in the back of the roof of the mouth. These Eagles, like *A. fulvescens*, can run very well; I have particularly noted this on many occasions. In one place I say, 'this was a winged bird, and several times ran from twenty to thirty yards with very great rapidity and cleverness, and but for the fact of its having dropped in a newly ploughed field, and there having been rain during the night, would have given a great chase; as it was, the soft clods tripped it up every twenty or thirty yards, giving it heavy falls.'"

Though, so far as my own experience and that of Mr. A. O. Hume goes, the present species is by no means an "Imperial" bird, I cannot say that it is invariably as ignoble as I have found it to be. Mr. A. Anderson, an excellent field-naturalist, writing in 'The Proceedings of the Zoological Society' (1871, p. 682), states that "the food of the Imperial Eagle is as disgusting as it is varied according to circumstances; but I do not think the epithets, 'a great hulking Kite' and 'ignoble feeder,' are justly applicable, at least not so far as my experience goes. It is true that the bird will consort with Vultures over a dead bullock, making a hearty meal thereof, and that I have on several occasions found frogs in their crops; but all Eagles will feed on carrion when pressed by hunger. I have found *F. imperialis* at times a bold and fearless bird, as the following anecdotes will show. When encamped in the station of Eta, on the 7th of March last, I threw out the body of an Imperial which had just been skinned, and in a few moments I shot a brother Imperial in the act of tearing it to pieces from my *tent door*. On another occasion a Wokab (*Aquila fulvescens*) had just deprived a Kite of the entrails of a Fowl, which again was immediately afterwards taken possession of by an Imperial, which in return fell to a charge of my gun in the most *public part of my camp*.

"These instances are enough to show that my friend Dr. Tristram has rightly depicted the character of this Eagle when he calls it a 'truly imperial bird,' and, again, that 'there is a beauty and majesty in its movements, and in its greater fearlessness of man when in search of food, which at once attracts one.' Though hunger will compel this bird to eat carrion, there is no doubt that it prefers better food. I have seen them times without number perched on the boughs of trees overlooking swamps, evidently on the look-out for Ducks.

"Early one morning, when out shooting (the sun had hardly risen), I heard the melancholy notes of the Brahminee Duck (*Casarca rutila*) overhead (a sound that must be familiar to every Indian sportsman); and five minutes later I saw a huge Imperial in the act of devouring the object of its affections, in the middle of a large Antelope-plain. On another occasion I shot a magnificent female *black* Imperial, the only fully mature bird of the season, when about to take a Duck from the edge of a jheel. As it is now being contended that the European and Indian Imperial Eagles are two distinct birds, and as one rarely gets a black one in this country, I make the following verbatim extract from my note-book, which was jotted down on the spot:—'Camp,

Mynpoory Canal, Febrnary 11, 1871. After examining the Jugger's nest I went along the banks of the winding jheel near the canal, as the ground looked promising for Peregrines and *A. nœvioides*. To my delight I saw a black, rufous-headed Imperial fly across the jheel and settle on a small beyr tree; as she perched the bough regularly gave with her weight, and she had some difficulty in keeping her position on the sapling, first spreading out one wing and then the other to keep her balance true. As she was intent on watching the Ducks, I crossed the most shallow part of the jheel, and managed to crawl unobserved behind a cane-field to within thirty yards of the tree, when down she came without injuring a feather.'"

The food of the Imperial Eagle consists of carrion, hares, moderate-sized birds, and small mammals. The Rev. T. Phillips, writing from North-west India, states that he "shot a specimen of the Imperial Eagle in a lonely tree, where it was perched with its mate. When killed, it had a half-digested rat in its stomach.

"I once saw this bird fly off with a Partridge which I was on the point of shooting, and after a while managed to bring both down, and found that whilst flying it had gutted the Partridge and partly devoured its entrails. It sometimes seizes hares, with which, if very large and heavy, it can only rise about a yard from the ground; it then flys very slowly off; frequently some of the farmers may be seen running after and frightening it to relinquish its prey.

"The 'Jumbiz,' as the natives call it, will kill and eat half-grown Peafowls. They often take away a grown Fowl. I once observed it seize a tame half-grown Peafowl which was flying down from a tree; and almost at the same moment the captor was attacked by another Jumbiz, and the whole fell to the ground together; running up, I found that the first bird had its wing broken, and could not fly away."

It is a wary and shy bird, and unless one lies in ambush near a carcass placed as a bait, it is by no means easy to get within gunshot of it. Mr. A. Anderson writes that he "at first found impossible to get within shot of these Eagles, though I used a double-barrel No. 7 Duck-gun, carrying seven drachms of powder and two ounces of shot. Latterly, however, I devised means by which a bird was hardly lost, and not only saved myself a considerable amount of ammunition, but also bodily suffering. Happening to be out one morning without my gun, I rode up to an Imperial which was perched on the top of a babool, some 25 feet high, in order to see how close the bird would allow me to approach. Having got to about 20 yards from the tree, and the bird showing no signs of uneasiness, I *stalked* her in a circuitous way (the same as one does when shooting Antelope), narrowing the circle each round I took, till at last I pulled up right under the tree, and looked the Eagle full in the face. She (sex judged from her size) was in the *lineated* stage, and kept her eyes fixed on me, apparently quite fascinated, and actually refused to fly notwithstanding I waved my hat at her. After this successful manœuvre I gave up shooting Raptores on foot, and invariably rode up to them in the manner above described, making my shikaree carry a small gun on my off side, and giving him the order to fire when I got sufficiently close."

My friend Mr. C. Farman also states that in Bulgaria he found it "always shy and difficult to approach, but even more so during the breeding-season; the male bird is always on the watch, either flying in graceful circles at some height above and about the nest, or seated on some neighbouring tree, whence, on the slightest appearance of danger he comes swooping down

towards his eyry, uttering a hoarse croaking noise, as a warning to the female, who instantly leaves the nest and joins her partner in his circling evolutions high up above their eyry.

"Owing to their great sagacity, I found it extremely difficult to approach within shot of them; the way in which I ultimately succeeded was by riding up to them on horseback. When I discovered a nest I rode straight up to it at full gallop, and as the bird left its nest I pulled up short and shot it. In this way I succeeded in securing many good specimens; and in one instance I was fortunate enough to secure both birds and their nest of two eggs.

"During the breeding-season, if at no other time, the male birds are extremely pugnacious; and many a desperate encounter between them have I witnessed. On one occasion, when riding home to Shitangick from the works, my attention was drawn to a pair of these Eagles by their loud croaking and hoarse shrieks, which they were both uttering with as much force as their lungs would permit; and I then witnessed one of the most exciting and desperate duels that ever took place between two birds. The encounter took place at from two to three hundred feet above the ground, and lasted a good twenty minutes. They began the engagement by flying round each other at some little distance; and every now and then one of them would make a dash in at the other, which avoided it in the most dextrous manner, and in his turn became the aggressor; this, however, only appeared to be their method of 'squaring-up' to each other; for they now went at it in good earnest. After separating from each other some distance, one of them suddenly turned, and with full force dashed in at its opponent, who also turned to receive the attack; and uttering a hoarse croak they closed with each other. The *mêlée* which now ensued, in which beak, claws, and wings were equally active, and of which little could be distinguished but a mass of perturbed feathers rolling in the air, is far beyond my powers of description. At last they clutched each other with such a firm grasp that, neither having its wings at liberty, they both came tumbling down in each other's embrace for a distance of a hundred feet or more, when they released their hold and separated for a while; and thus ended the first round. The second round began in a similar manner to the first; every now and then one of the birds would make a feint at the other. They now changed their tactics, and by sailing in short spirals each endeavoured to get above his adversary: in this way they rose to a considerable height, till at last one bird, having got well above the other, came down upon him with a terrific swoop; the lower bird, nothing daunted, instantly turned right on its back and in a most dexterous manner received his enemy on his outstretched talons; another *mêlée* then ensued similar to the first, ending in the same way by their tumbling down a couple of hundred feet or so in each other's embrace and separating as before. Thus the battle raged for nearly half an hour, when one of the birds having got far above the other, made a fell swoop down upon his gallant enemy, striking him with great force at a height of about three hundred feet from the ground. The lower bird received him manfully; and fixing his talons well into him, they both came down to the ground with a heavy thud not ten yards from me. I jumped from my horse with the intention of securing these noble gladiators; but when almost within my grasp, they released their hold and made off in different directions. That their fight had been a desperate one, the blood on the spot where they fell bore ample testimony."

The Imperial Eagle is known to breed in South-eastern Europe and North-west India, and generally, if not always, places its nest on a tree. Instances are on record of an Imperial Eagle

nesting on the ground; but I am inclined to believe that if these statements are closely investigated the nests will be found to belong to some allied species, and not the bird whose history I am now writing. The bird found in Eastern Europe, so closely allied to, if not identical with, the Indian *Aquila bifasciata*, and hitherto known as *Aq. clanga*, nests, I believe, always on the ground; and being so nearly equal in size to the Imperial Eagle, it is very possible that the eggs of the Imperial Eagle said to have been found on the ground belong to that species. Eggs of that bird, obtained in the Ural, and sent to me by Mr. Sabanäeff, are in size fully equal to those of the present species, but are somewhat more richly marked.

One of the earliest accounts of its nidification is that by Mr. W. H. Hudlestone in 'The Ibis' (1860, p. 376), who writes as follows:—"One would imagine that an Eagle's nest in a pollard 10 feet high was not difficult to find; yet many had passed that way daily without noticing it. Still less difficulty attended the capture; all the romance usually attaching to such a feat disappeared. Nothing remained, after due and proper identification, but to walk up and take possession. The nest was of a good size, its exterior circumference being, at a guess, 15 feet; the interior was slightly depressed, but only enough to keep the eggs (two in number) from rolling out. It was lined with wool, which rested upon an immense circular platform of sticks entirely filling up the boll of the pollard, from which the young willow-branches sprang upwards in a circle all round the nest. By this means the entire structure was inclosed in a sort of arbour, which would screen the birds from the wind and sun, and from general observation. The eggs, which were slightly incubated, resemble each other considerably—the one figured measuring 2·9 in. by 2·2 in., and being of a uniform dull-white colour, with frequent marks and scratches, and occasionally larger blotches of pale brownish grey."

Mr. Farman, writing from Bulgaria, says that "nidification commences at the end of March or beginning of April, the 8th of April being the earliest date at which I have found the eggs (some thirty of which I have taken). I have, however, taken fresh eggs of this bird as late as the first week in May. Its favourite place for building its eyry is on an isolated tree, or where the trees are scattered about at some distance from one another, or a clump of two or three, at the most, standing alone in the open country, but where there is little or no cultivation.

"The nest is little more than a large flat platform of coarse sticks, about 3 feet 6 inches in diameter, and piled up to the height of 18 inches or 2 feet, but in some old nests much higher. The interior is slightly concave, and lined with a few smaller twigs and a little dry grass, wool, pieces of old rag, or any other small rubbish that comes within their ken; in most instances, however, the lining is very scanty.

"The number of eggs in a nest is generally two, sometimes three, never more, and not unfrequently only one."

Messrs. Elwes and Buckley, likewise writing from the same locality in Bulgaria, say that "this Eagle is surprisingly common both in Macedonia and in Bulgaria, and is essentially a lover of the plains, where it may be seen hunting for food in the manner of a Buzzard, or perched on a solitary tree. Hardly a day was passed, when travelling over the great plains, without finding some nests of this bird, which were often quite close to a well-frequented road. Many a hard and unsuccessful climb they gave us in the early part of the season, from their habit of sitting on the nest for several weeks before laying; and it was some time before we could resist the temptation of going up when a magnificent Eagle quietly sailed off within a few yards.

"For as long as six weeks this continued, and we began to despair, till on the evening of April 2nd, when, at a Tartar village where we were to sleep, a great Eagle flapped off a nest on a stunted willow not a hundred yards from the house. One of us was very soon up, and found a beautiful egg covered with blotches of lilac and red, quite the finest we ever took. After this we found them frequently in isolated trees or bushes in the open country, only once in a wood. The nests are moderately large and flat, well lined with wool and rubbish, and contain from one to three eggs, which are usually much less marked and blotched than those of the Golden Eagle.

"The male bird takes his turn at incubation, while the female goes in search of food; and they sometimes leave the nest entirely for some time. The young are hatched at the end of April or beginning of May, and do not remain in the country very long, as we never observed an Imperial Eagle in immature plumage during the whole of our journey. In the evening these Eagles roost with Kites and Falcons in clumps of trees in the open country; and by waiting at these places just before dark we could always obtain specimens, as there were often six or seven in one tree."

Regarding its breeding-habits in India, Mr. A. O. Hume, in his 'Rough Notes,' writes that "I noticed above that this species only breed in the *plains of India* in the far north-west; but I once had reason to think that occasional stragglers may nest lower down country, even in the plains. On the 5th of February, 1867, my head stuffer at Etawah returned with a male Imperial Eagle and an egg (white, a rather dull coarse texture, with barely perceptible, faint, yellowish streaks and spots, and a few tiny darker specks) measuring 2·63 by 2·06, which he professed to have obtained as follows:—He saw a female *imperialis* sitting on a nest on a large Peepul tree; as he approached she flew off; he fired at her, but failed to bring her down. He then hid at the foot of the tree and waited. After some time the male returned, and, finding the nest empty, settled on it, when he shot him. The nest, which I afterwards examined, was some two feet in diameter, lined with leaves and the feathers of Wild Geese and Ducks. My reasons for somewhat doubting this account are, 1st, my stuffer's general want of veracity; 2nd, our never having met with any other examples of this species breeding so low down; 3rd, my finding, when I visited the nest fifteen days later, a Snake-Eagle (*Circaetus gallicus*) sitting near it. At the same time it must be noted that I was then particularly anxious to find a Snake-Eagle's nest, none of which I had then taken, and that it is very improbable that, had my stuffer found a nest of *that* bird, he would *knowingly* have represented it as belonging to any other; *he might* make a *mistake*; but, born and bred a fowler, he *very* rarely blundered, though he often lied. On the whole, the balance of probabilities were in favour of the authenticity of the egg, which, however, in common with all other suspected specimens, I long ago threw away.

"In the high tableland of Southern India and the Neilgherries this Eagle doubtless breeds. Jerdon mentions having seen a nest in a lofty tree in the Dekhan; but of its nidification there I have received no detailed account."

Twelve eggs of this Eagle in my collection, all obtained by Mr. C. Farman in Bulgaria, vary in size from $2\frac{34}{40}$ by $2\frac{7}{40}$ inches to 3 by $2\frac{15}{40}$ and $3\frac{2}{40}$ by $2\frac{9}{40}$ inches, and are white or dull whitish in colour generally, but slightly clouded with pale purplish red or blotched with pale rufous; three, however, are blotched with rufous almost as much as ordinary eggs of the Golden Eagle; and, on the other hand, six are almost pure white. All these eggs were taken out of nests built

in trees. My friend Dr. E. Rey informs me that he has "received the eggs of this Eagle from Hungary, Greece, Macedonia, Southern Russia, and Asia Minor. These eggs vary considerably in coloration, grain, form, and size; the average size of twenty-one eggs in my collection is 74·7 by 56·9 millimetres, the two largest measuring 82·5 by 57·0 and 76·5 by 60·0 millimetres, the two smallest 70·0 by 55·75 and 72·75 by 54·25 millimetres. In Hungary the eggs are deposited from the 12th to the 30th of April, and the sitting usually consists of two, seldom three eggs."

The specimens figured are:—on the one Plate an adult female from India (spec. *e* in the Norwich collection) and an adult male from Bulgaria, in my own collection; and on the second Plate a young bird in the striated plumage from the Dobrudscha (spec. *f* in the Norwich collection) is figured with a young *Aq. adalberti*. The adult male described is the one figured, and the young bird is also the Dobrudscha specimen figured on the second Plate.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Bulgaria, April 1866 (*C. Farman*). *b*, ♂. Sirsa, Punjab (*Marshall*).

E Mus. Norvicensi.

a, ♂ *juv.* N.-W. India, February 1st, 1867 (*W. E. Brooks*). *b*, ♂ *ad.* N.-W. India, 1872 (*W. E. B.*). *c*, ♀, *d*, ♀. Futtehpore, January and December, 1872. *e*, ♀. Loyah, January 13th, 1872 (*W. E. B.*). *f*, ♂, *juv.* Dobrudscha (*Dr. Cullen*).

E Mus. Lord Walden.

a, ♂ *ad.* Zoulla, N.-E. Africa, March 11th, 1868 (*W. Jesse*).

E Mus. Lord Lilford.

a, *juv.* India? (*Verreaux*).

E Mus. A. von Hügel.

a, ♂ *ad.* Ober Kovil, Lower Hungary, May 12th, 1871.

E Mus. T. E. Buckley.

a, *juv.* Macedonia, March 5th, 1869.

E Mus. H. B. Tristram.

a, *juv.* Lebanon, June 1864 (*H. B. T.*). *b*. Smyrna, September 1868 (*Krüper*). *c*, ♀. Etawah, N.-W. India, February 14th, 1868 (*W. E. Brooks*). *d*. Etawah, November 23rd, 1868 (*W. E. B.*).

Obs. Mr. Gurney has just sent to me for examination, from the Norwich Museum, one of Brehm's types of *A. adalberti* (♀, Aranjuez, 2nd of May, 1861), and I am thus enabled to state from actual observation that it is that species in young plumage, and not *A. nævioides*.



J.Wolf del

W.Hart lith

GOLDEN EAGLE.
AQUILA CHRYSAETUS.

AQUILA CHRYSAETUS.

(GOLDEN EAGLE.)

Aquila, Briss. Orn. i. p. 419 (1760).
Aquila alba, Briss. tom. cit. p. 424 (1760).
Aquila chrysaetos seu *Aquila aurea*, Briss. tom. cit. p. 431 (1760).
Aquila melanaetus seu *Aquila nigra*, Briss. tom. cit. p. 434 (1760).
Falco chrysaetus, Linn. Syst. Nat. i. p. 125 (1766).
Falco fulvus, Linn. ut suprà (1766).
Falco fulvus β. *canadensis*, Linn. ut suprà (1766).
Falco pygargus, Scop. Ann. I. Hist. Nat. p. 14 (1768).
Le Grand Aigle, Buff. Hist. Nat. Ois. i. p. 76 (1770).
L'Aigle commun, Buff. tom. cit. p. 86 (1770).
Falco melanaetus, Gmel. Syst. Nat. i. p. 254 (1788).
Falco canadensis, Gmel. tom. cit. p. 256 (1788).
Falco americanus, Gmel. tom. cit. p. 257 (1788).
Falco albus, Gmel. tom. cit. p. 257 (1788, ex Briss.).
Falco niger, Gmel. tom. cit. p. 259 (1788).
Falco melanonotus, Lath. Ind. Orn. i. p. 16 (1790).
Falco cygneus, Lath. tom. cit. p. 14 (1790).
Falco aquila, Daud. Traité d'Orn. ii. p. 47 (1800).
Aquila americana (Gm.), Vieill. Ois. Am. Sept. i. p. 31 (1807).
Aquila canadensis (Gm.), Wils. Am. Orn. pl. lv. fig. 1 (1808).
Falco cygneus, Shaw, Gen. Zool. vii. p. 76 (1809).
?*Falco conciliator*, Shaw, tom. cit. p. 77 (1809).
Aquila chrysaetus (L.), Leisl. Ann. wetter. Gesellsch. i. p. 143 (1809).
Aquila fulva (L.), Savigny, Syst. Ois. de l'Egypte et de la Syrie, p. 22 (1810).
Aquila nobilis, Pall. Zoogr. Rosso-As. i. p. 338 (1811).
Falco regalis, Temm. Man. d'Orn. p. 10 (1815).
Aquila regia, Less. Traité d'Orn. p. 36 (1831).
Aquila melanaëtos, C. L. Brehm, Vög. Deutschl. p. 20 (1831).
Aquila daphanea, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Aquila imperialis, Cresp. Faun. mérid. i. p. 131 (1844, nec Cuv.).
Aquila fuscicapilla, L. Brehm, Naumannia, 1851, pt. iii. p. 24.
Aquila barthelemyi, Jaub. Rev. et Mag. Zool. 1852, p. 545.
Aquila intermedia, Severtzoff, Turk. Jevotnie, p. 112 (1873).

Iolair-dhub, Gaelic; *Grand Aigle*, French; *Aguila*, Spanish; *Aquila reale*, Italian; *Ogab*, Moorish; *Karakush*, Turkish; *Gold-Adler*, *Stein-Adler*, German; *Steen-arend*, Danish;

Kongeörn, *Stenörn*, *Fjeldörn*, Norwegian; *Kungsörn*, Swedish; *Maakotka*, Finnish; *Bjerkut*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 409, 410; Werner, Atlas, *Rapaces*, pl. 17; Kjærb. Orn. Dan. taf. 1; Fritsch, Vög. Eur. taf. 7. figs. 1, 2, 3; Naumann, Vög. Deutschl. taf. 8, 9, 339; Sundevall, Svensk. Fogl. pl. 30. fig. 1; Gould, B. of Eur. pl. 6; id. B. of G. Brit. i. pl. 2; Schlegel, Vog. Nederl. pls. 23, 24, 25; Audub. B. of Am. pl. 12; Wilson, Am. Orn. pl. lv. fig. 1; Susemihl, Vög. Eur. taf. 16, 17.

Ad. fronte et capitis lateribus fuscis: pileo, nuchâ et collo postico rufescenti-cervinis, vix rufescenti-fusco notatis, plumis acuminatis et pallidiùs terminatis: dorso, scapularibus, et tectricibus alarum minoribus saturatè fuscis vix purpureo lavatis, plumis ad basin albidis vel cinereis: remigibus primariis nigro-fuscis, secundariis saturatè fuscis, ad basin griseo marmoratis: caudâ ad basin fuscâ griseo fasciatâ et ad apicem nigro-fuscâ: mento, gulâ, gutture et corpore subtùs saturatè fuscis: tarsi plumis rufescenti-cervinis: iride corylinâ: cerâ et pedibus flavis: rostro saturatè corneo.

Juv. corpore suprà saturatiore: pileo et nuchâ saturatè fuscis, plumis griseo-cervino terminatis: dorso imo et uropygio albo variegatis: caudâ ad basin albâ et versus apicem nigro-fuscâ: corpore subtùs albido variegato: tarsi plumis albis vix fusco striatis.

Adult Male (Glinnik, Archangel, 17th March, 1873). Forehead and cheeks deep brown; crown, nape, and hind neck warm rufous buff, varied with rufous brown, most of the feathers with lighter tips, and all the shafts of the feathers blackish; back, scapulars, and lesser wing-coverts deep brown with a faint purplish gloss, most of the feathers with greyish or whitish bases; primaries blackish brown, secondaries dark brown, marbled, except towards the tip, with greyish white; tail on the basal two thirds blackish brown, barred irregularly with dark grey, and on the terminal third uniform blackish brown; chin, throat, and underparts deep, almost blackish, brown, with here and there the light bases of the feathers showing through; tarsus feathered, rufous creamy buff in colour; iris rich hazel-brown; cere and feet yellow; bill dark horn; and claws blackish horn. Total length nearly three feet, culmen 2·8 inches, wing 23·6, tail 13·5, tarsus 4·2.

Adult Female. Resembles the male, but is rather larger.

Young Male (Sierra Nevada, January 1871). Differs from the adult in having the upper parts more uniformly dark in colour; the crown and nape are dark brown, the feathers having greyish buff tips; the lower back and rump are much varied with white; the basal two thirds of the tail are white, very slightly marbled with pale brown; the underparts are much varied with white; and the feathers on the tarse are dull white, streaked and slightly marbled with brown.

The range of the Golden Eagle embraces almost the whole of the Palæarctic Region; for it occurs from Northern Scandinavia down to North Africa, and from Spain right across Europe into Dauria in Eastern Asia, ranging south in the Eastern Palæarctic Region to the Himalayas. It is also found in North America, in the Arctic Regions, ranging south into temperate America.

In Great Britain, though generally a somewhat rare species, it is not uncommon in the highlands of Scotland, where it still breeds in many localities. Willughby states that about two

hundred years ago it used to breed annually on the high rocks of Snowdon; and he describes a nest found in Derbyshire in 1668. According to Sir William Jardine it formerly bred in Westmoreland and Cumberland; and Bewick states that it used to nest on the highest parts of Cheviot. Now, however, it is only seen as a rare straggler, except in the wildest portions of Scotland, and, as might be expected, it is but seldom seen in Central and Southern England. It has on more than one occasion been recorded in Norfolk; but Mr. Stevenson informs me that he only knows of one authentic specimen obtained in that county. Mr. Cordeaux states that a young female was shot near Duffield, in Yorkshire, in December 1861; and Mr. Hancock speaks of it as being a rare and casual visitant to Northumberland and Durham. In Scotland *Aquila chrysaetus* breeds in most of the western and northern counties, but in the lowlands it is only met with in the autumn and winter. The Rev. T. B. Bell informed Mr. A. G. More that it bred some years ago in Kirkcudbright; and Mr. More gives also Stirling, Perthshire, and Aberdeenshire as nesting-localities for this species. It also breeds in the Hebrides, and used formerly to do so in the Orkneys, though not in the Shetlands. It appears by no means improbable that in some portions of Scotland the Golden Eagle is rather increasing than decreasing in numbers. In proof of this I may cite the following information given me by Mr. David Bruce, junr., of Stirling. This gentleman writes:—"I believe that I can show that the Golden Eagle instead of diminishing is gaining ground in the Braemar district. Macgillivray, who in his 'Natural History of Dee-side' gives a list of the species inhabiting this district, says, 'This species, which formerly existed in considerable numbers in Braemar, and bred in the precipices of the wildest glens, is now very seldom to be seen there;' and, again, 'In the course of six weeks' excursions among the mountains I saw only two individuals.' Now in 1876, after a lapse of twenty-six years, the following is a list of the Eagles I saw during a fortnight spent amongst these wild bleak hills and rugged glens, viz.:—On the 22nd May I noticed a single Eagle assailed by Black-headed Gulls in the precipices which surround Loch Dubh on the south. On the 23rd May I saw three soaring together over the Dubh rock near Dubh Loch; and I subsequently saw two together at the same place as on the 22nd inst. On the 27th May I observed one sailing slowly along over the ridge of Derry Cairn Gorm. On the 1st June, whilst Macdonald and I were sitting on the side of Cairn Toul, one passed us going full cry; and Mac assured me that it is not an uncommon occurrence to see as many as six together in this locality."

In Ireland this Eagle appears to have decreased in numbers of late years; but it still nests in some of the wilder parts of the country. Professor Newton remarks that it probably breeds in the most dreary portions of Mayo and Donegal, though in the latter county it was believed a few years since that only a single pair remained.

The Golden Eagle neither inhabits Iceland nor Greenland, but is found throughout Northern Scandinavia. Mr. Collett says that it breeds in the mountainons parts of Norway, especially in the interior of the Hamar and Christiansand stifts, and along the west coast, north of the Dovre, to the Russian frontier, both on the mainland and on the islands. In the autumn and winter it visits the lowlands, but it scarcely ever straggles as far south as the Christiania valley. In Southern and Central Sweden, as in the lowlands of Norway, it is only a straggler, and somewhat rare. In Finland it is found chiefly in the northern and more mountainous portions of the country; and in Russia it occurs in the far north and in the Ural range, straggling during the

autumn and winter throughout most parts of Central Russia. I have received skins and eggs from near Archangel; and Messrs. Seebohm and Harvie-Brown, who remark that they frequently saw Eagles on the Petchora, identified the present species at Habariki. Sabanäeff states that it is common in the Ural range, and in the wooded parts of the Perm Government. It is said to occur near Moscow in the autumn, and also, though rarely, in the Kazan and Simbirsk Governments. According to Mr. Taczanowski the Golden Eagle is tolerably common in Poland in the autumn and winter. "I only know one district" (he writes me), "viz. that of Przasnysz, where this Eagle bred in 1856, quite close to the Prussian frontier. I have there seen several nests situated on low pine trees, growing at the foot of a hill which overlooked the neighbouring forests. Only one was occupied by the Eagles; the rest were either empty or occupied by Falcons. On the same tree at the foot of which the Eagles were breeding, a good many other birds built in peace: a Jay's nest was placed on one of the inner branches; a pair of wild Doves had their eggs in a hole in the trunk, and several Sparrows above."

Not only is it an occasional visitant to many parts of North Germany, but it breeds still in Mark Brandenburg. Ratzeburg cites it as having nested near Neustadt as late as 1849; still later than this Mr. Weise says that it bred in the forests of the Brandshaide; and Mr. Schalow states that for more than fifty years it has nested regularly near Lohburg and Wittenberg; and Mr. Henrici informed him that a pair bred in 1874 near Woldenburg, and the young birds were shot from the nest by Mr. Ritz. Mr. Benzon, of Copenhagen, informs me that the Golden Eagle is by no means rare in the autumn, spring, and winter in Denmark, but that it is not known to have been obtained there in the summer, nor does it breed in that country. Mr. Gätke has obtained this Eagle on Heligoland; and it is of rare occurrence in Western Germany, Belgium, and the north of France, though in the mountainous districts and in some of the larger forests in the last-named country it is said to be resident. It is extremely numerous in the mountainous districts of Portugal; and Mr. Howard Saunders says (Ibis, 1871, p. 61) that in Spain it "breeds in every mountain-range. In the Sierra Nevada it is considered the commonest of the large Raptores. I know of one eyry in the Gaitanes, and observed the species in Mallorca." Colonel Irby also writes (Orn. Str. Gibr. p. 39), "I never met with the Golden Eagle in Andalucia, though I have seen one said to have been shot many years ago near Gibraltar. They occur in the mountains near Granada, and probably in others of the high sierras. I found in April a nest of an Eagle, apparently of this species, on a very high cliff near Jebel Moosa, opposite Gibraltar; but being unable to obtain the bird, we left the nest untouched."

Passing eastward, again, I find the Golden Eagle recorded as being resident and tolerably abundant in Switzerland and Savoy; and it is also to be met with in the mountain-ranges of the Alps and Apennines, as also in the mountain districts of Sicily and Sardinia. Referring to its occurrence in the last-named island, Mr. A. B. Brooke writes (Ibis, 1873, p. 149), "This is the commonest Eagle in the island. A nest found on the 21st of April was built on a grassy ledge of a small precipice, and contained two eggs. One was addled; but the other was just beginning to chip; so I took it home and had it hatched under a hen; but, unfortunately, the young bird died in less than a week, from having been overfed during my absence. The weight of the old female, which I shot, was 11 lb. 9 oz.; her crop was full of mutton in a high state of decom-

position." Mr. Jesse, who shot two in Corsica, remarks that both these specimens appeared to him to be smaller than the ordinary run of Golden Eagles, but he unfortunately did not take measurements. Mr. C. A. Wright records its occurrence on two occasions in Malta; but he does not appear to have secured either of the two examples obtained.

In Southern Germany the Golden Eagle is resident in most of the mountain-ranges; and in the autumn individuals are seen in the plains. Dr. Fritsch says that immature birds are seen every autumn in Bohemia, and have been killed even close to Prague. In 1835 it was found breeding on large trees in the Bärengraben, Riesengebirge; and it is said to have nested there as late as in 1864. Mr. Seidensacher informed me that about twenty years ago a pair nested close to Wertenstein, not far from Cilli (Styria); but both the young were taken and one of the parent birds shot, after which the survivor disappeared. And I am indebted to the Ritter von Tschusi-Schmidhofen for the following notes:—"I am fully convinced that *Aquila fulva* and *Aquila chrysaetus* are the same species, and shall include them as such in my work 'Ornis Austriaca.' The forester Brusek writes from Upper Hungary stating that he holds the same opinion, and that he found these two supposed species paired together. The male (*Aquila chrysaetus*) was shot; and the young bird, which was taken out of the nest, was kept alive, and when grown up assumed the plumage of *Aquila fulva*. There is no difference in their habits. A Steinadler which Woboril (*vide* Fritsch, Vög. Eur. p. 9) kept alive for a long time had a plain blackish brown tail; but when young it had a deal of white on the tail, which after some time became all over blackish brown. My own experience tends to show that the Gold-Adler is the old bird, and the Stein-Adler the young. Young birds are killed annually in Bohemia; and in 1844 and 1846 it bred in the Riesengebirge. In Mähren (Moravia) it has also been often found breeding; in Lower Austria it occurs during migration; in the mountains of Upper Austria it is resident; and in the Tyrol also it is a common resident; in Styria it is rare, but has been met with breeding; in Hungary, Siebenbürgen, and Galicia it is common, and breeds there." Messrs. Danford and Harvie-Brown speak of this Eagle as being common in Transylvania, "especially in autumn, when they frequent the low country. They nest in rocks, and have been known to breed as low down as the Hátzeger Wald. We saw them on various occasions at Hátzeg, in the Mezöség, near Görgény, and in the mountains around Fanczal."

I frequently saw the Golden Eagle when in the mountains of Servia, and was assured that it breeds there; and Mr. Farman, who met with it in Bulgaria, writes:—"In comparison with some of the Eagles, this monarch of the airy realms is a scarce bird; I have observed some few individuals in various parts—one near the head of the lower Devna lake, one in the Pravidy valley, and several others in the hill-country to the westward and northward of Shumla."

In Southern Russia *Aquila chrysaetus* is resident in many districts; and it is said to be, comparatively speaking, tolerably frequent in the Uman district. Von Nordmann records it as being but rare in the steppe country, though less so in the Caucasus. It is found in the Crimea; and Pallas states that the Kirghese train it for falconry.

Dr. Krüper states that it is resident in Greece, as also in Ionia and Macedonia, where, however, it is less common. Lord Lilford met with it twice at Butrinto, and adds that it is not numerous in Albania and Epirus. Dr. Krüper also met with it in Asia Minor, where, according to Mr. Danford (Ibis, 1878, p. 4), it is "common and resident. Breeds in the mountains and in

the interior in low ranges of rock, the nests being generally easy to get at. The first nest was taken on the Bulgar dagh." Canon Tristram states that it is not uncommon in Palestine.

In North-east Africa, Von Heuglin says, *Aquila chrysaetus* is of rare and irregular occurrence in the winter in Lower Egypt, Arabia Petræa, and the coast-regions of Tripoli, and probably also in Abyssinia. It is also found in North-western Africa, but does not range either into Central or Southern Africa. Loche met with it in the three provinces of Algeria, and also in the Sahara. Amongst a large number of examples obtained by him he found several which had partially white scapulars, and which therefore belonged to the variety to which Jaubert (*l. c.*) gave the name of *Aquila barthelemyi*. The female of one pair he procured had partially white scapulars, whereas the male was in the ordinary plumage of the Golden Eagle. Both Mr. O. Salvin and Canon Tristram met with this Eagle in Algeria. The former gentleman writes (Ibis, 1859, p. 180):—"The title of the Golden Eagle to be considered as the King of Birds is fully confirmed in the Atlas. Whatever rock a pair may choose for their eyrie, there they reign alone in dignified solitude, nor do they allow a single Vulture, Kite, or indeed any other species of rapacious bird to occupy with their nest a single spot in the same rock, however eligible for the purpose; nor are these other species ever to be seen in the haunts of their exclusive majesties. The whole southern precipice at Djebel Dekma was thus tenanted by a single pair of this Eagle, as also several other rocks that came under our notice. The eggs are laid in March, and are for the most part two in number, though in some cases no more than one occurred. The eggs taken in this district are many of them richly marked; but the spots appear to be more isolated than is observable in many Scotch specimens. Instances of the Golden Eagle building in trees were by no means of unfrequent occurrence. The Arabic name of this bird is '*Hogarb kakala*,' or 'Black Eagle.'" Canon Tristram also says (Ibis, 1859, p. 283):—"I never observed this bird in any of the cliffs by the 'Weds' or mountain ranges of the Desert; but in the Dayats it abounds. It might almost be said to be gregarious, especially in the Dayat of Tirehmet, a day's journey north of Berryan in the Mzab. The wood here extends over many acres; and I saw no less than seven pairs of Golden Eagles, who had each their nest. There were many other unoccupied nests; in fact there were few Terebinths of any size without a huge platform of sticks on the topmost boughs. Many of the smaller Dayats were tenanted in like proportions. Any zealous oologist might collect in this region the eggs of fifty nests in a month, could he obtain a sufficient supply of water to enable him to remain; but the necessity of sending a four days' journey for water may preserve this colony undisturbed for many years to come. The Gazelles and Sand-Grouse who resort to the Dayats are probably a sufficient supply for the Eagles and Kites who reside here; and the impossibility of finding other nesting-places may render the Eagles less tenacious of their domains. Being undisturbed, they are very fearless; and I twice walked under a tree and brought down a fine specimen with No. 7 shot." Mr. C. F. Tyrwhitt Drake says that this Eagle breeds at Tetuan; Favier states that it occurs on passage near Tangier, passing north in January and February and returning in July and August, some few remaining to breed; and Dr. C. Bolle records it from Southern Morocco.

In Asia the Golden Eagle is found as far east as China, and as far south as the Himalayas. Dr. Severtzoff, who met with it in Turkestan, is inclined to divide this species into two sub-

species; but, so far as I can judge, I do not think that he is justified in so doing. Mr. Blanford believes that *Aquila chrysaetus* is found in many parts of Persia; and Mr. A. O. Hume thinks that he saw it on the Mekran coast. Mr. V. Scully, who met with it in Eastern Turkestan, writes (Stray Feathers, iv. p. 123):—"This species is the celebrated '*Birkut*,' the name by which the Golden Eagle is known in Khokand and Western Turkestan generally; in Kashgharia, however, it is called 'Karakush,' *i. e.* black bird. The trained bird is very common in Eastern Turkestan, every governor of a district or town usually having several. It is said to live and breed in the hills south of Yarkand and near Khoten, where the young birds are caught to be trained for purposes of falconry. A few stragglers occasionally visit the plains in winter. I saw one a few miles from Yarkand in January, and another near Beshkant in February. In the wild state this Eagle's prey is said to consist of the stag, the 'kik' (*Antilope gutturosa*), the wild cat, the fox, and the wolf. The trained *Karakush* is always kept hooded when it is in doors, except when about to be fed; and the method of carrying it to the chase is the following. The man who is to carry the Eagle is mounted on a pony, and has his right hand and wrist protected by a thick gauntlet. A crutch, consisting of a straight piece of stick carrying a curved cross piece of horn or wood (the concavity being directed upwards), is attached to the front of the saddle; the man grasps the cross piece of the crutch with his gloved hand, and the Eagle then perches on his wrist. I have ridden about for four or five hours attended by men carrying Birkuts in this way; and they never complained of feeling tired." According to Mr. Hume this Eagle is of such excessive rarity south of the snows in the Himalayas that it scarcely deserves a place in the Indian list; and Dr. Jerdon writes (Ibis, 1871, p. 244):—"I have seen this magnificent Eagle occasionally in the upper portion of the Sutlej valley, always at great elevations, never less than 12,000 feet; but in Ladak it is much more common from 10,000 feet to 11,000 feet, and I used to watch in vain for two or three nights in succession to get a shot at a pair that roosted in a magnificent deep ravine close to where my tent was pitched. It is always said by the hill-people to prey much on *Tetraogallus* and *Lerwa*."

It is found throughout the mountainous districts of Eastern Siberia. Dr. Radde records it from the Onon river; and Dr. Dybowski, writing respecting its occurrence in Dauria, says (J. f. O. 1872, p. 345):—"In Kulluke we only observed examples of this Eagle on passage. In 1871, during the autumn migration, they were more numerous than in former years; during the first half of October we saw every day from five to ten individuals. They nest in the forests of the Irkutsk valleys (where we saw everywhere birds of the year), also at Lake Kosogol. We often saw them striking Ruddy Sheldrakes and hawking after *Chen hyperboreus* and *Spermophilus eversmanni*." Colonel Prjevalsky obtained one in the autumn at Alashan, in Mongolia; and he also observed it in Kansu and Koko-nor, where, however, it was very scarce; and Père David records it as tolerably numerous and resident in the larger mountain ranges of the Chinese empire.

In the Nearctic Region the Golden Eagle is chiefly confined to the mountainous regions of North America, and is nowhere numerous. Messrs. Baird, Brewer, and Ridgway say (N. Am. B. iii. p. 315) that on the Atlantic coast it has been obtained as far south as Philadelphia, and twice at Washington. It breeds in the mountainous portions of Maine, New Hampshire, Vermont, and New York, and it was formerly not unfrequent among the cliffs of the Hudson

river. In Arctic North America it is but rare; but it was found in Oregon by Dr. Townsend; and, according to Dr. Cooper it is quite common in California during the colder months. It was also obtained among the mountains of New Mexico by Dr. Henry's party.

The American Golden Eagle has by many authors been separated from the European bird; but I cannot believe that there is any just ground for specific separation. As a rule, adult American birds are somewhat darker than the Old-World Golden Eagle; and in the immature American bird the tarsal feathers are brown, whereas in young European examples these are white; but Mr. J. H. Gurney points out (Ibis, 1877, p. 212) that this is not invariably the case, as he cites two instances of young American Golden Eagles having white tarsi, and he examined five Old-World birds, all of which had brown tarsi.

This, our largest and most powerful bird of prey in Great Britain, though on the whole gradually decreasing rather than increasing in numbers, is still frequently to be seen in most of the larger Highland glens and the more rugged and mountainous portions of Scotland. Owing to the protection afforded to this bird in several of the larger deer-forests in the Highlands, it is likely to be for some time to come, at least, a bird that one may with tolerable certainty be sure of meeting with; and I know of a considerable number of eyries that are still regularly tenanted by it. Unfortunately its eggs are so much sought after by collectors that many of these eyries are systematically robbed, and hence there are many difficulties in the way of an increase in the numbers of this species. Though a noble, independent, and powerful bird, the Golden Eagle is cruel and ferocious, and by no means so brave as he has been described; for he is keen enough to avoid danger and will often suffer himself to be driven away by a much weaker and less powerful bird. Although this Eagle is frequently seen soaring in circles at great altitudes, yet, when in search of prey, it usually flies low, often at not many yards from the ground, which it quarters carefully. Sometimes a pair may be seen hunting in company; but as a rule it appears to follow the chase solitarily. It flies with ease and grace, propelling itself with regular flaps of the wings and alternate sailings, now and again wheeling in circles, and usually moving in silence. It preys on hares, rabbits, lambs, fawns, grouse, birds of various sorts, moles, rats, mice, &c.; and when impelled by hunger it does not disdain carrion, any more than its ally the Imperial Eagle does. During the lambing-season it commits considerable havoc amongst the young lambs, and will carry off bodily a lamb several weeks old. It is especially fond of hares, and will hunt them down most systematically. In Finland I have known it follow a hare, driving it out of the patches of brushwood in which the unfortunate animal seeks to take refuge, by slashing the bushes with its powerful wings; and directly the hare dodges out into the open the Eagle strikes at, until at last he wearies and catches it. Occasionally two Eagles are said to hunt in company, the one driving the quarry out of cover, whilst the other remains outside to pounce on it. The cry of the Golden Eagle is a loud yelp, uttered several times in succession, not unlike the call-note of the Buzzard, but much clearer and louder.

This Eagle selects for the site of its eyry a rock, usually one tolerably well clothed with vegetation; and the nest is frequently near the top, in some portion of the rock which is difficult of access; but I have known of more than one placed where they were accessible to a good climber without the assistance of a rope. The nest is repaired and frequently added to every year. But the same nest is not used every season; for the Eagles have usually several favourite

sites in different quarters, and are said to frequently repair them all before making a final choice of the one to deposit their eggs in. The nest is usually a large and bulky structure, though it varies a good deal in size. In Great Britain it is generally placed on a ledge of rock, but in other parts of Europe it has been known to be built in trees. Mr. Wolley, who took so many eggs of this species, as well as of our other rarer birds, says:—"A nest is generally five or six feet in its greatest width, considerably less on the top. Sometimes the mass of materials would fill a cart; but in other situations there is no great quantity. The very largest of the sticks used may be an inch in diameter; but most of them are less. Upon these is laid freshly gathered heather, and in one instance large sprigs of Scotch fir, broken off for the purpose. The top part is composed of fern, grass, moss, or any other convenient material, but principally (and, as far as I have seen, invariably) of tufts of *Luzula sylvatica*, which, by the time the eggs are hatched, are still fresh and green towards the outside of the nest, but dried up in the centre with the heat of the bird's body (so as to look) like little flattened pine-apple tops. Once I saw this in a great measure replaced by tufts of a kind of *Carex* or *Nardus*. The hollow of the nest is never deep; but whilst the eggs are unhatched it is often pretty regular and sharp at the inner edge; and it is not more than a foot from the back wall of rock, close to which the soft materials are generally packed. There is little interlacing of the material; but the whole structure, whilst it appears loose, is yet so firm that it scarcely springs at all with the weight of a man." The eggs, from one to three, very seldom four, in number, are usually deposited in April, and are laid at intervals of a few days, being hatched in the same order. The female Eagle sits very close; and should she be killed the male is said to take her place. Many tales have been told of the ferocity with which the Golden Eagle will defend its nest when it is robbed of its eggs or young; but it seems to be the exception, and not the rule, for the bird to attack any one, though there are several undoubted instances on record of people having been assaulted when approaching an Eagle's eyry.

The eggs of the Golden Eagle vary considerably, both in size and coloration; and while specimens may be found pure white, others are richly marked, rufous-blotched, and almost as brightly coloured as an average example of the egg of the Egyptian Vulture. As a rule, Scotch eggs appear to be most richly coloured, though I have seen one or two examples from the Pyrenees nearly as beautiful as any of those. It is somewhat remarkable that all the eggs I have received from Archangel, in almost all cases with one of the parent birds, are pure white without any markings whatever. The usual type of egg of this species is white, marked with violet-grey underlying shell-markings and blotches, and rich dark-red surface-blotches and spots. In size those in my collection vary from $2\frac{2}{40}\frac{7}{}$ by $2\frac{1}{40}\frac{0}{}$ inches to $3\frac{2}{40}$ by $2\frac{1}{40}\frac{8}{}$ inches.

Perhaps I have not entered as fully into the details of the nidification of this interesting bird as I might have done; but I may refer such of my readers as may wish for further and more precise particulars to the very excellent and exhaustive account in Professor Newton's 'Ootheca Wolleyana,' pp. 8–43.

When Dr. Severtzoff was staying with me some time ago, I was working at Eagles; and he was very positive as to there being in some parts of Europe a form of Golden Eagle which had the basal portion of the tail white in the mature dress; but, so far as I can judge from a careful examination of every Golden Eagle I have since had an opportunity of seeing, this view is not

correct. The bird, after the first down-clothing, gradually assumes a dark plumage, in which the base of the tail is white, and the tarsi (as a rule) are also white. As the bird approaches maturity the tarsi become tinged with brown or rufous buff, and the tail gets marked with greyish brown on the basal portion, until, after a time, the fully adult dress is assumed.

The specimens figured are the adult and young birds above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *jun.* Falster, Denmark, January 1865. *b*, ♂ *jun.* Laaland, Denmark, December 1871 (*A. Benzon*). *c*, ♀ *ad.* Central Russia (*Dr. Stader*). *d*, ♂ *ad.* Glinnik, Archangel, March 17th, 1873 (*Piottuch*). *e*, ♂ *juv.* Sierra Nevada, Spain, January 1871 (*H. Saunders*).

E Mus. Brit. Reg.

a, *b*, *pull.*, *c*, *juv.*, *d*, ♂ *ad.*, *e*, ♀ *ad.* Orkneys (*Bullock*). *f*, *ad.* Archangel. *g*, ♀ *juv.* Skåne, Sweden, November 1872 (*Meves*). *h*, *juv.* Tunis. *i*, *k*, *juv.* Huzara, N. Punjab (*Capt. Unwin*). *l*, ♂ *ad.* Nepal (*Hodgson*). *m*, *ad.*, *n*, *o*, *juv.* N. America. *p*, *ad.* Fort Simpson, N. America (*B. H. Ross*).

Genus HALIAETUS.

Aquila apud Pallas, Reis. Russ. Reichs, i. p. 454 (1771).
Vultur apud Linnæus, Syst. Nat. i. p. 123 (1766).
Falco apud Linnæus, Syst. Nat. i. p. 124 (1766).
Haliaetus, Savigny, Syst. Ois. de l'Egypte et de la Syrie, p. 25 (1810).
Haliaëtos apud C. L. Brehm, Vög. Deutschl. p. 14 (1831).
Cuncuma apud Hodgson, Journ. As. Soc. Beng. vi. p. 367 (1837).
Ichthyaëtus apud Blyth, Ann. Nat. Hist. xiv. p. 37 (1844).
Pontoaëtus apud Kaup, Isis, 1847, p. 280.

The Sea-Eagles inhabit the Palæarctic, Ethiopian, Oriental, Australian, and Nearctic Regions, two only of the seven known species being found in the Western Palæarctic Region. Unlike the species belonging to the genus *Aquila*, the Sea-Eagles frequent the sea, lakes, and rivers, seldom being found far away from water, and they feed chiefly on fish and water-fowl, though also on the smaller mammals, lambs, hares, rabbits, and carrion. Though powerful, they are less bold than the other larger Raptores, and seldom attack any larger animal than a hare or a lamb. Their flight is strong, though rather heavy; and their cry is a clear, loud yelp. They breed early in the season, placing their nest on a rock or a lofty tree, and constructing a large bulky nest of sticks lined with dried grass and moss. Two eggs are usually laid, these being white and rather rough in texture of shell.

Haliaëtus albicilla, the type of the species, has the beak strong, elongated, straight to the end of the cere, whence it curves to the tip, which is deeply hooked, the line of the bill slightly bulged before the commencement of the hook; nostrils in the anterior part of the cere, large, oval, or lunate in shape; wings long and broad, the first quill shorter than the secondaries, the fourth longest; tarsus feathered on the upper half, the front of the lower part and of the toes scutellated, the sides and back reticulated; toes divided to the base, the outer one versatile; claws strong, curved, grooved beneath, acute, that of the hind toe much larger than the rest.



M.A.N. Hannart imp.

PALLAS' SEAEAGLE.
HALIAETUS LEUCORYPHUS

HALIAËTUS LEUCORYPHUS.

(PALLAS'S SEA-EAGLE.)

Aquila leucorypha, Pall. Reis. Russ. Reichs, i. p. 454 (1771).
Falco leucoryphos (Pall.), Gmel. Syst. Nat. i. p. 259 (1788).
Haliætus fulviventer, Vieill. Nouv. Dict. xxviii. p. 283 (1819).
"*Falco macei*, Cuv." Temm. Pl. Col. i. pl. 8, ad., pl. 223, juv. (1824).
Haliaëtus macei (Temm.), Vig. Zool. Journ. i. p. 336 (1824).
Aquila macei (Temm.), Less. Man. d'Orn. i. p. 84 (1828).
Haliaetus unicolor, Gray & Hardw. Ill. Ind. Zool. pl. 19 (1832).
Haliaëtus albipes, Hodgs. Journ. As. Soc. Beng. v. p. 228 (1836).
Cuncuma albipes, Hodgs. Journ. As. Soc. Beng. vi. p. 367 (1837).
Haliaëtus leucorypha (Pall.), Keys. & Blas. Wirbelth. Eur. p. 30 (1840).
Ichthyaëtus leucoryphus (Pall.), Blyth, Ann. Nat. Hist. xiv. p. 37 (1844).
Haliaëtus lanceatus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Pontoaëtus leucoryphos, G. R. Gray, Gen. of B. i. p. 18 (1845).
Pontoaëtus macei (Temm.), Kaup, Isis, 1847, p. 280.
Cuncuma macei (Temm.), Gray, Cat. Accip. p. 23 (1848).
Aquila deserticola, Eversm. Bull. Soc. Imp. Mosc. xxv. p. 545, pl. 8 (1852).

Dolgochvost, Russian.

Figuræ notabiles.

Temminck, Pl. Col. 8, 225; Fritsch, Vög. Eur. taf. 8. figs. 5, 6; Susemihl, Vög. Eur. taf. 27, *a*; Bree, B. of Eur. i. pl. to p. 75.

♂ *ad.* capite et collo rufescenti-isabellinis, mento et gulâ pallidioribus: corpore suprà saturatè umbrino: remigibus nigro-fuscis: caudâ ad basin et in parte apicali saturatè fuscâ et centraliter albâ: gutture imo, pectore et corpore subtùs rufescenti-brunneis, hypochondriis et subcaudalibus saturatioribus: rostro viridi-corneo, versus apicem nigricante: cerâ pallidè viridi-cæruleâ: iride flavo-fuscâ: pedibus pallidè griseo-albis vix cæruleo tinctis.

♀ *ad.* mari similis sed major.

Juv. capite et collo saturatè fulvidis, pallidè ochraceo-brunneo striatis: corpore suprà fusco, dorsi plumis ad basin saturatioribus: tectricibus alarum pallidioribus, medianis pallidè brunneo marginatis, majoribus eodem colore apicatis: remigibus nigro-fuscis, extùs cinereo tinctis: caudâ fuscâ cinereo tinctâ, supracaudalibus pallidè brunneo marginatis: corpore subtùs pallidè fusco-fulvo: pectore brunneo, albido notato: pedibus pallidè flavidis.

Adult Male (Sarepta). Head and neck warm rufous cream-colour, paler below, being pale yellowish white on the chin and upper throat, and darker or rufescent ochreous above; rest of the upper parts dark

umber-brown, the quills blackish brown; tail dark brown at the base, then white broadly terminated with dark brown; lower throat, breast, and underparts generally dark reddish brown, rather warmer in colour on the lower throat and breast, and darker on the flanks and under tail-coverts; bill greenish horn, dusky at the tip; cere pale bluish green; iris pale brownish yellow, in some lights almost silvery; legs greyish white with a faint bluish tinge. Total length about 32 inches, culmen 2·7, wing 22, tail 11·7, tarsus 3·85.

Adult Female (India). Resembles the male, but is rather larger in size.

Young (India). Upper parts dark brown, the dorsal feathers darker at the base; wing-coverts lighter, the median coverts with light-brown margins, the larger ones tipped with pale brown; quills blackish, externally washed with ashy; tail dark brown with an ashy shade; upper tail-coverts margined with pale brown; head and neck dark fulvous brown, streaked with sandy brown; rest of the underparts rather lighter fulvous brown, the feathers on the breast tipped and margined with whity brown; legs pale lemon-yellow.

Obs. According to Mr. Hume (Rough Notes, p. 244) a nestling female, taken out of a nest at Rahun, was "nearly uniform dark brown above, and rather lighter below. The legs and feet were clear pale lemon-yellow."

The present species, first described by Pallas, is but a rare bird in the Western Palæarctic Region, and is confined to the eastern portion; but in the Eastern Palæarctic Region it is widely distributed throughout India. I possess an example from Sarepta; and Mr. Jacovleff, who records it from the province of Astrachan, says that it is rare. Pallas speaks of it as occurring on the shores of the Caspian and Black Sea, but adds that it is not common. Colonel Irby states that it is common in the interior of the Crimea, and bred in two instances on trees close to the Katcha river. He sent the head, feet, and sternum of one shot there to England for identification. Mr. Farman states (Ibis, 1869, p. 202) that he several times observed a Sea-Eagle in Central Bulgaria, which was very distinguishable from the other species of Eagles in having "a white head and neck and a white tail with a dark edging," which he believes was the present species; but he did not succeed in obtaining a specimen. In the spring of 1865, he says, "a pair built their nest on a gigantic elm tree growing on the banks of a stream near Uvola, about thirty miles from the sea-coast, where the Pravidy valley opens out into a broad plain, which in April is covered with water, and presents the appearance of a small lake." He could not succeed in shooting either of the old birds, but robbed the nest of the young bird.

Mr. C. G. Danford, who has lately returned from the Taurus Mountains, informs me that he found Pallas's Sea-Eagle by no means rare there, and could have shot several; but the locality was so rugged that he could not have recovered one if he had killed it, and he consequently did not bring back a specimen. I have carefully compared my specimen from the Volga with examples in the British Museum from India, and cannot detect any specific difference either in size or plumage; and although my comparison is made with only one European specimen, yet I think it is sufficient to enable me to state that European and Asiatic birds are specifically identical. I do not find any record of the occurrence of this Eagle in Palestine or North Africa; but it is common to the eastward into India, and is stated to occur as far as Eastern Siberia. Major St. John says that a large Sea-Eagle is common about Bushire, where he has often seen it

sitting on the stakes set up in shallow water by fishermen; and he also frequently noticed it in summer about the Kazerán and Dashtiarjan lakes. As he remarks that "it is recognizable by the broad dark band in the middle of the white tail," the bird to which he alludes must have been the present species. Dr. Severtzoff informs me that during the summer season it occurs throughout Turkestan, where at times it is numerous, but it only occurs rarely in the winter season. According to Dr. Jerdon (B. of India, i. p. 85), this Eagle is "found throughout the north of India, most abundant in Bengal and the countries to the westward. It ascends the Ganges and other large rivers to some distance, and is found in Nepal and as far north-west as Cashmere, where Dr. Adams has observed it on the lakes and rivers. It is also common on the Indus." Mr. A. O. Hume says that he found it very common all down the great rivers from Jhelum to Sukkur, and he noticed a few between Sehwan and Hyderabad. I do not find the present species mentioned by Middendorff, Radde, or Schrenck; but Mr. Taczanowski states (J. f. O. 1874, p. 326) that both adult and immature examples were obtained on the Argun, and that Mr. Godlewski wrote to him stating that it is common and breeds in Eastern Siberia. Colonel Prjevalsky met with it in Mongolia, on the northern bend of the Hoang-ho, where it was tolerably common. He also observed it in Kan-su, and during the spring and autumn he found it about Koko-nor. It is a migrant, arriving in March and leaving in the late autumn; but he thinks that he saw it near Urgey in September 1873. He believes that it breeds in the Hoang-ho valley.

Respecting the habits and nidification of the present species in Europe I find no reliable data beyond what little is given by Colonel Irby; but some interesting notes respecting its general habits in India have been collected and published by Mr. A. O. Hume, who writes (Rough Notes, p. 242) as follows:—"I have taken the eggs of this species during the latter half of November, in December, and January, and once or twice in the early part of February. The greater number of these birds, however, lay in December; and most of the nests that I have examined later than the 15th of January have contained young ones. They build on large trees, on the Peepul (*Ficus religiosa*) by preference, I think, but also on many other kinds—Sheeshum (*Dalbergia seesoo*), Banyan (*F. indicus*), &c. The trees that they select are almost invariably solitary ones, situated either on the bank of some river, or beside some considerable jheel. In Upper India I do not know a single large jheel which retains water in it as late as February where a pair of this species does not breed; and all down the Jumna, Ganges, Chambul, and Sutledge, wherever I have been, I have invariably met with at least one pair every three or four miles, and in particular localities every *half* mile.

"The nest is a huge platform of sticks, some of which are often as thick as a man's arm, with a superstructure of thinner sticks and twigs, and with only a slight depression towards the interior, which is lined with twigs and green leaves, occasionally intermingled with rushes and straw. The nest is usually placed in a broad fork, near the very top of a tree, on branches that seem scarcely strong enough to support the huge mass, and is sometimes occupied by the same pair for many successive years.

"I do not think that this species ever takes possession of other birds' nests. It either builds a new one for itself or repairs one formerly belonging to it, even though this may in the interim have been usurped by *Vultur calvus* or *Ketupa ceylonensis*, both much addicted to annexing the

poor Sea-Eagle's laboriously constructed nest. I say laboriously constructed, because I once watched a young pair constantly occupied for a month building a new nest, which they were still at work finishing off when I left. Nothing can seem rougher or more rugged than their nest when finished; and yet out of every four sticks and branches that they brought they rejected and threw down at least three. Both birds brought materials; and side by side the pair would work away, throwing down almost as many sticks as they brought. Then, apparently, they would quarrel over the matter; there would be great squealing, and one would fly away and sit sulky on some cliff-point near at hand. After a time the one left on the nest would go off in quest of materials; immediately the other would drop softly on to the nest and be very busy (though what it did, except lift a stick and put it down in the same place, it was impossible, even with a good glass, to make out) till the absent bird returned, not unfrequently with a fish instead of a stick. It is a curious fact, but I observed it repeatedly, that if the female, which is much the largest, brought the fish to the nest, the male set to work on it at once, without so much as, 'By your leave;' while if the male brought it, the female used to eye it, sidle gradually up, and only take slow and modest mouthfuls. When, however, the female begins to sit, the male will bring her fish or fowl, and go off for other food for himself, not attempting to share it with her; and when not on the nest, neither seems to presume to interfere with the other's captures without permission.

"The usual number of eggs laid by this species is three; but I have myself twice found four, and it is not at all uncommon to meet with two fully incubated or two young ones in a nest.

"One curious point about these birds is, that, unlike most Eagles, they do not always desert a plundered nest. I have twice taken single eggs out of the nests, and ten or twelve days later, on reexamining the same nests, in consequence of observing the same birds still hanging about the place, found that a couple more eggs had been laid since my last visit."

It has been stated by several authors that the present species never offers any resistance should its nest be robbed; and Mr. Hume also says that his experience tends to confirm this; but Captain Hutton, who says that when the nests he has taken contained eggs the parent bird did not attempt any resistance, adds as follows, viz.:—"On one occasion, however, I met with a very different reception, when my servant was attacked with an unexpected ferocity, from which nothing but my gun could have saved him. The circumstance occurred in January 1832, when on my way up country. The nest was placed near the summit of a tree growing on one of the Colgong rocks, in the middle of the Ganges, and contained two half-fledged young ones.

"The old birds offered a most determined resistance; and without the aid of firearms we should decidedly have been defeated, as they dashed fiercely and fearlessly at the man in the tree, who prayed hard to be allowed to descend, and was only kept at his post by promise of reward and fear of the cudgel. At first we had to contend with the female only; but after one or two rapid stoops and dashes at the robber's head, which he avoided by bobbing under the nest, finding she could make no impression, she suddenly uttered a shrill cry, which was responded to in the distance; and in an instant after, her mate was seen swiftly gliding to her aid from the opposite bank of the river. The two then charged together towards the nest with the rage and fierceness of despair, and so terrified the man in the tree, hampered as he was with the young ones, that had I not fired at and wounded the Eagles as they advanced, they would

assuredly have hurled him into the river. In this manner, however, after repeated attempts to come to the rescue, we managed to drive off the old birds and secure our booty."

Mr. Hume also publishes the following notes sent to him by Captain Hutton:—"In the Dhera Dhoon this bird is extremely common; but it merely skirts the outer hills, about 5500 feet, without entering them. I have seen six to eight together, passing along the side of the hills below Mussoorie for some distance, and then returning again in like manner; but what the object can be I cannot make out; for there is no fishing-ground along that route. They build in lofty trees on the banks of the larger Dhoon streams, laying one or two large, white eggs. The nest I have described in the Journal of the Asiatic Society of Bengal. The cry of this bird is loud and harsh, and somewhat querulous; it may be heard at a great distance, and on more than one occasion has guided me to the nest. Often have I watched this handsome bird seated high, perched in solitude, upon the dry and leafless branch of some tall tree that overlooked a river-bank, or oftener seated on the bank itself, watching perchance for the appearance of its prey.

"Uttering its shrill and clamorous cry, half croak, half scream, it would suddenly spread out its wings and sweep across the water, rising gradually in wide gyrations, until nearly lost to sight, and taking a keen survey of the plain beneath, then gradually descending in circles as before, until with a sudden downward headlong rush it would dash upon a Partridge or a Hare and bear it off in triumph. I have seen it hawking on the Ganges after Ducks and Teal, which are sometimes found, in the rains, breeding with swarms of Paddy-birds on the Colgong rocks, in the middle of the river. The Duck would quietly paddle along the centre of the stream; and the Eagle would follow the same course far above, but gradually and slily descending along the line, until with a sudden downward dash it would nearly reach the Duck, and then slowly and gradually sweep upwards again as the wary little Duck plunged deeply beneath the surface to rise again before or behind the Eagle, which would pursue it over and over again in like manner without a chance of success, until, weary of the chase, he would wing his way to shore, doubtless to inform his mate that no 'duck and green peas' were forthcoming for that day's dinner!

"Where, however, the Duck is a wounded one (and I have but rarely seen these Eagles strike at those that were not so) the result is often different, as my own notes, which I proceed to transcribe, will show:—This is essentially a water-bird, and, as far as I know, is never found far from the banks of large rivers, lakes, or jheels. Early in the morning, even in cold weather, it goes down to the water-side and has a bath. It is amusing to watch this large bird standing up to its belly in water, sitting down first on one side, then on the other, so as to wash the wings and back, ducking the head in and out, and splashing, sputtering, and fluttering the wings, for all the world like a Pigeon or a Sparrow. After its bath it resorts to the top of a tree, or, along the banks of large rivers, to some craggy point, where it sits awhile sunning itself, generally with its wings half-outspread. Thence it flies heavily off to seek a meal. A large fish near the surface attracts its attention as it flies pretty low over the river; down it swoops with more activity and rapidity than its habitual demeanour and method of flight would lead one to expect, and strikes for a breakfast, dashing its huge feet and long legs into the water right up to the body. Very often (far more often than he succeeds) the Ringtail is baulked by the Roohoo (*Cyprinus rohita* and *mrigala*), his favourite fishy food, and has to try again and again before he succeeds. If anywhere he should spy a wounded Goose or other-water bird, he is down on him or after

him in a moment; the bird, even if only slightly wounded, and flying more or less well, when the Eagle takes up the chase, drops at once into the water. Down swoops the Eagle, its long legs extended to the utmost; and just as his claws are within a yard of the victim's head down dives the Goose, only to rise when its pursuer has swept past. Round comes the Ringtail again, down dives the Goose. Again and again these manœuvres are repeated; and at last either the Eagle gives up the chase, or the Goose (and this I think is most generally the case), diving a little too slowly, gets caught by the long legs (which are each time dashed out their whole length in the water) before it has got deep enough down; and the Eagle then flies slowly to the shore, bearing its prey in its talons. A Grey Goose will weigh on the average 7 lb. (much heavier are recorded); but I have repeatedly seen good-sized Grey Geese carried off in the claws of one of these Eagles, the bird flying slowly and low over the surface of the water, but still quite steadily. Once, many years ago, one of these birds procured me a fine fish for breakfast. Standing on the high clay cliff on the Meerut side of the river, at Baghput, on the Jumna, a little above the ghat, I saw one of these Eagles capture a fish so large that the bird only with great difficulty succeeded in reaching a low sandbank, in the river, with its prey. As it flew to this bank it flew so low and with such difficulty that the writhing fish in its claws struck the water every few yards, and twice seemed likely to pull its persecutor under water. At last, however, the sand, some 250 yards from where I stood, was reached. Directly the shore was gained I fired a heavy rifle at the Eagle, the bullet passing just above it. For a minute it struggled to rise again with the fish; but a second bullet, closer still, compelled it to rise without the fish; and though it circled round above, uttering its shrill scream, to be joined in a few minutes by its mate, they neither of them ventured down, and a boatman crossed and brought the spoil over to me. This was a roohoo (*Cyprinus rohita*), and weighed 13 lb. 2 oz., and was perfectly uninjured, except a gash at the back of the head, four deep claw wounds on the back of the neck, and four more about halfway down the back. I have often tried this plan since, but never with success, the captured fish in every other case having proved light enough for the bird to fly away with when shot at."

I am indebted to Mr. W. E. Brooks for eggs of this Eagle, taken by him in N.W. India, all of which are pure white in colour, and rather smoother in texture of shell than those of the Imperial and Spotted Eagles. In size they vary from $2\frac{3}{4}\frac{1}{0}$ by $2\frac{5}{4}\frac{}{0}$ inch to $2\frac{3}{4}\frac{2}{0}$ by $2\frac{7}{4}\frac{}{0}$ inch.

The specimen figured is an adult male from Sarepta, on the Lower Volga, in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Sarepta (*Dr. Stader*).

E Mus. Brit. Reg.

a, ad. Behar. *b, juv.* Nepaul (*B. H. Hodgson*). *c, pull.* India.

E Mus. H. B. Tristram.

a, juv. Burrampootra, India, April 1863 (*E. Langlands*).



J G Keulemans del.

Mintern Bros. imp

SEA EAGLE
YOUNG



SEA EAGLE

HALIÆETUS ALBICILLA

HALIAETUS ALBICILLA.

(SEA-EAGLE.)

Pygargus hinnularia, Charlet. Exerc. p. 79. no. 4 (1677).
The Golden Eagle, Albin, Nat. Hist. Birds, ii. pl. 1 (1738).
L'Aigle à queue blanche, Briss. Orn. i. p. 427 (1760).
Le petit Aigle à queue blanche, Briss. tom. cit. p. 429 (1760).
Le grand Aigle de Mer, Briss. tom. cit. p. 437 (1760).
Vultur albiulla, Linn. Syst. Nat. i. p. 123 (1766, misprint).
Falco ossifragus, Linn. tom. cit. p. 124 (1766).
Falco albicilla (Linn.), Gm. Syst. Nat. i. p. 253 (1788).
Falco albicaudus, Gm. tom. cit. i. p. 258 (1788, ex Briss.).
Falco hinnularius, Lath. Ind. Orn. i. p. 15 (1790, ex Charl.).
Falco pygargus, Daud. Traité d'Orn. ii. p. 62 (1800, ex Briss.).
Haliaetus nisus, Savigny, Descr. Egypte, Ois. p. 253 (1809).
Aquila leucocephala, Wolf, Taschenb. deutsch. Vogelk. i. p. 16, pl. 4 (1810, nec Linn.).
Aquila albicilla (L.), Pall. Zoogr. Rosso-As. i. p. 345 (1811).
Haliaëtus albicilla (L.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 9 (1816).
Falco albicilla borealis, Faber, Isis, 1827, p. 56.
Haliaëtos albicilla (L.), C. L. Brehm, Vög. Deutschl. p. 14 (1831).
Haliaëtos orientalis, C. L. Brehm, tom. cit. p. 15 (1831).
Haliaëtos borealis, C. L. Brehm, tom. cit. p. 15 (1831).
Haliaëtos islandicus, C. L. Brehm, tom. cit. p. 16 (1831).
Haliaëtos groenlandicus, C. L. Brehm, tom. cit. p. 16 (1831).
Haliaëtos leucocephalus, C. L. Brehm, tom. cit. p. 17 (1831, partim).
Haliaëtos cinereus, C. L. Brehm, Vogelfang, p. 17 (1855).
Haliaëtos funereus, C. L. Brehm, tom. cit. p. 17 (1855).
Haliaëtos albicilla germanicus, A. E. Brehm, Verz. Samml. C. L. Brehm, p. 2 (1866).
Haliaëtos albicilla borealis, A. E. Brehm, ut suprà.
Haliaëtos albicilla orientalis, A. E. Brehm, ut suprà.
Haliaëtos albicilla islandicus, A. E. Brehm, ut suprà.
Haliaëtos albicilla groenlandicus, A. E. Brehm, ut suprà.
Haliaëtos albicilla funereus, A. E. Brehm, ut suprà.
Haliaëtus pelagicus, Hume, Rough Notes, ii. p. 252 (1870, nec Pall.).
Haliaëtus brooksi, Hume, Ibis, 1870, p. 438.

Erne, *Joliar-Bhuidhe*, *Joliah-Riamhach*, Gaelic; *Pygargue ordinaire*, French; *See-Adler*, *Meeradler*, German; *Zeearend*, Dutch; *Aquila di mare*, Italian; *Havörn*, *Fiskeörn*, Danish; *Œrn*, *Assa*, Icelandic; *Orn*, Færoese; *Havœrn*, Norwegian; *Hafsörn*, Swedish; *Merikotka*, Finnish; *Orel*, Russian; *Varesh*, Ziranin.

2

Figuræ notabiles.

D'Aubenton, Pl. Enl. 112, 415; Werner, Atlas, *Rapaces*, pl. 22; Kjærb. Orn. Dan. taf. 1, and Suppl.; Frisch, Vög. Deutschl. pls. 69, 70; Fritsch, Vög. Eur. taf. 7. figs. 4, 5; Naumann, Vög. Deutschl. tafs. 12, 13, 14; Sundevall, Sv. Fogl. pl. 30, figs. 2, 3; Gould, B. of Eur. pl. 10; id. B. of G. Brit. i. pl. 4; Schlegel, Vog. Nederl. pls. 27, 28, 29; Susemihl, Vög. Eur. pls. 25, 26; Gray, Gen. of Birds, pl. 7. fig. 8.

Ad. capite et collo albidis vix ochraceo lavatis, plumis ad basin pallidè brunneis et rhachibus saturatè brunneis: dorso superiore et tectricibus alarum pallidè brunneis, plumis omnibus ochrascente albido marginatis: dorso reliquo, uropygio et supracaudalibus saturatè fuscis, ex his nonnullis albido notatis et marmoratis: remigibus nigro-fuscis, rhachibus albicantibus, secundariis intimis et scapularibus saturatè brunneis: caudâ albâ, ad basin nigro-fuscâ: gulâ ochrascenti-albidâ, gutture imo et pectore brunnescentioribus: corpore reliquo subtùs saturatè brunneo, subcaudalibus ferè nigro-fuscis: rostro et iride pallidè flavis: pedibus flavis, unguibus nigricantibus.

♀ mari similis sed major, capite et collo brunnescentioribus.

Juv. capite et nuchâ nigro-fuscis, nuchæ plumis pallidè brunneo apicatis: corpore suprà nigro-fusco fulvido variegato: remigibus nigro-fuscis, secundariis intimis et tectricibus alarum fulvidis nigro-fusco marginatis et apicatis: supracaudalibus sordidè et saturatè brunneis, nigricante apicatis: rectricibus brunnescenti-albidis valde nigro-fusco marginatis et brunneo marmoratis, centralibus pallidioribus: mento et gulâ fuscis, plumis ad basin albidis: corpore reliquo subtùs nigro-fusco, fulvido immixto: rostro nigricante, cerâ flavicanti-brunneâ: iride fuscâ: pedibus flavicantibus.

Adult Male (Sarepta, January). Head and upper neck white, with a creamy tinge, most of the feathers dull brown at the base, the shafts of all being dark brown, lower neck, fore part of the back, and the wing-coverts dull light earth-brown, all the feathers being broadly edged or terminated with dirty white, tinged with cream-colour; remainder of the back, rump, and upper tail-coverts dark brown, some of the last marked or marbled with white; quills blackish brown, the shafts being whitish; inner secondaries rather lighter brown; scapulars dark earth-brown; tail rounded, almost wedge-shaped, pure white, except at the extreme base, where it is blackish brown; upper neck and throat coloured like the head, the lower neck and breast gradually becoming browner; rest of the underparts dark earth-brown, most of the feathers edged or margined with lighter brown; under tail-coverts dark, almost blackish brown; bill pale bluish, becoming yellow at the base; cere yellow; iris straw-yellow; feet light yellow, claws bluish black. Total length about 33 inches, culmen 3·6, height of bill at base 1·6, wing 26·5, tail 12·5, tarsus 4·2.

Adult Female (Sarepta). Resembles the male, but is somewhat darker, and has not got the head and neck so light-coloured. In size it is larger, measuring—culmen 3·8 inches, height of bill at base 1·6, wing 27·3, tail 12·10, tarsus 4·5.

Young Female (Greenland). Upper surface of the body dark blackish brown, varied with fulvous brown, the base of the feathers being of the latter colour; crown uniform blackish brown, the long feathers on the nape tipped with light brown; upper surface of the wings fulvous, the feathers tipped, and to some extent margined, with blackish brown; quills blackish brown, the inner secondaries, however, coloured like the upper surface of the wings; upper tail-coverts dark earth-brown, tipped with blackish brown; tail-feathers whity brown, broadly margined with dark brown, and marbled with brown; the central

rectrices are lightest, and have a creamy tinge, the outer ones being greyish in tinge; under surface of the body like the back, the bases of the feathers being fulvous brown, the terminal and central portions being dark brown; throat and chin with the bases of the feathers white; bill blackish; cere yellowish brown; iris dark brown; feet yellowish. In size larger than the adult, measuring—culmen 3·6 inches, wing 28·7, tail 15·5, tarsus 4·6.

Nestling (Hungary, 25th April). Covered all over with dull sooty down, with long tufts of whitish down shooting through every here and there.

Obs. In very old specimens of both sexes the iris is bright yellow, and the bill is yellow, the feet being almost orange-yellow; but these colours appear to be only assumed in the very fully adult stage of plumage. The specimen I have figured, though in apparently fully adult dress, had neither assumed the yellow iris, nor yet was the bill yellow, but the former was pale yellowish brown and the bill pale bluish, except at the base and the lower mandible, where it was yellow.

The European Sea-Eagle inhabits the whole of the Palæarctic Region, in the eastern portion ranging southward to India and China, and in the western half down to North Africa. It does not occur in the United States, though it is common in Greenland.

Though some fifty years ago the Sea-Eagle was a resident in Great Britain, and not particularly rare in some localities, it has since then been nearly exterminated, and it is, comparatively speaking, but seldom that one is seen on our coasts. Professor Newton, in the new edition of Yarrell's 'British Birds' which he is now editing, says that "it has been taken in most districts of England, and even very near London, though less frequently in the midland than in the maritime counties. On the east and south-east coast, though not numerous, it may be regarded as a regular autumn and winter visitant—not that it confines itself to the sea-board, but haunts also the larger waters and the extensive rabbit-warrens of the interior. I have but scanty details respecting its occurrence on our south coast." Professor Newton thinks that the eyry in the Culver cliff, where an Eaglet was, as recorded in Warner's 'Isle of Wight,' taken in 1780, must have belonged to this species. Writing from Somerset, Mr. Cecil Smith informs me that "it is occasionally met with as a wandering straggler, and has been taken on the Quantocks and the Mendips, and also on the coast between Quantock-head and the mouth of the Parret; it has also been taken in the extreme western part of the county near the Devon boundary. All the Somerset specimens appear to have been young birds before they had assumed the white tail, which has occasionally led to their being recorded as Golden Eagles, which bird has never, I believe, been taken in this county. When I was in Guernsey in November 1872, two White-tailed Eagles were shot, one in Alderney, on the 2nd of November, and one at Bordeaux harbour, Guernsey, on the 14th of November; like the generality of the Somerset specimens, these were both young birds. Mr. Couch, the bird-stuffer at Guernsey, writing to me on the 10th of November 1873, mentions, amongst other things, 'an Eagle seen, probably a White-tailed.'" As stated by Mr. A. G. More, in his notes on the distribution of birds in Great Britain during the breeding-season (Ibis, 1865, p. 8), Willughby mentions an eyry in Whinfield Park, Westmoreland; and in 1692, Mr. Aubrey was told that Eagles bred in the parish of Bampton, in the same county (Corresp. of J. Ray, p. 257). Dr. Heysham tells us that this Eagle bred in Keswick and Ullswater. The late Mr. W. Thompson observed a pair of Eagles in the English Lake

district in July 1835; and Mr. C. S. Gregson informs me that there is a crag near Grassmere known as "Eagles' cliff." Mr. J. F. Crellin ascertained that a pair of Eagles used to breed in the cliffs at the south end of the Isle of Man.

On the east coast immature birds are occasionally met with; and Mr. Stevenson says (B. of Norf. i. p. 3) that "no less than three of these fine birds, two females and one male, were shot in different parts of the county during the winter of 1855–56; and in the following winter of 1856–57, between the months of November and January, three more were obtained on the coast. Two of the latter were killed at Winterton, near Yarmouth (a very favourite locality)—and nearly at the same spot the last specimen, being shot whilst hovering over a rabbit-warren, and on examination of the contents of its stomach (which besides contained a stoat) was found to have been feeding on the remains of a large whale, which had just previously been stranded on the Winterton beach. In January 1859, one or two of these Eagles were observed at Horning and other parts of the county; and in the severe winter of 1860–61 a fine pair frequented the lake at Holkham for some weeks, where, in spite of the ravages they committed amongst the wild fowl, the noble owner of the estate would not allow them to be disturbed. A fine young male was killed at Hickling on the 23rd of March, 1861; and about the same date in the following year a female was shot at Westwick. This was, no doubt, the same bird that had been seen only a few days previously at Northrepps, near Cromer, where Mr. Gurney's keeper observed it sitting on a tree perfectly indifferent to the mobbings of a flock of Jackdaws. In the spring of 1863 an immature bird was shot near Fritton decoy, in the adjoining county; and in November of the same year, another was observed, for a few days, in the neighbourhood of Wymondham, in Norfolk. Mr. Lubbock states that on one occasion, in very severe weather, he saw a fine Sea-Eagle as near this city as Postwick Grove, 'beating leisurely up the river, apparently searching for Coot or wild fowl in the wakes which remained unfrozen.' The late Mr. Girdlestone, of Yarmouth, also informed Mr. Lubbock that in the sharp winter of 1837 'he had three of these Eagles in sight at once.'" Mr. Cordeaux mentions several instances of its occurrence in the Humber district, where, as elsewhere on our east coast, it is occasionally met with.

In Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 10), "being a much commoner bird than the Golden Eagle, it has never at any time been in the same danger of extinction. Even in 1867 and 1868 there are numerous eyries, in places which have been occupied from time immemorial. Between Loch Brittle and Copnahow Head, in Skye, for example, nine or ten eyries might have been seen, while in several of the smaller groups of isles in the Minch and Gulf of the Hebrides at least a dozen more could be cited. The Isle of Skye, indeed, may be said to be the headquarters of this conspicuous Eagle in the west of Scotland, the entire coast-line of that magnificent country offering many attractions to a bird of its habits. Nearly each of the bold headlands of Skye is frequented by at least one pair of Sea-Eagles; and it is at no time a difficult matter to get a sight of them. On one property alone there were recently six breeding-places; and I have been informed by Dr. Dewar that quite recently as many as six old birds of this species assembled together and were observed soaring in a group above the house of Captain M'Donald near Bracadale. Thirty years ago the Erne was often observed in the parish of Hamilton, according to the Rev. William Patrick, a good observer in his day; and in several other inland districts in Lanarkshire, Ayrshire, Kircudbrightshire, and Wigtownshire similar

records might be given of its past existence. But even at the present time stray specimens are found wandering as far into the Firth of Clyde as Dunnoon—captures in such instances, however, being confined to birds of the year after they have been thrown off by the old ones. Ailsa Craig, formerly a breeding-station, is now only visited by a passing vagrant; and in Islay two well-known eyries, one at the Mull of Oe the other at Bolsa, have for some years been entirely deserted, although stray birds still visit the island.

"In the eastern counties of Scotland this Eagle is usually met with in autumn; and almost all the specimens procured, from Berwick to Orkney, which I have seen or heard of, were immature birds. At St. Abb's Head, in Berwickshire, a solitary Eagle is occasionally seen about that season frequenting the precipitous cliffs, which are occupied in summer by large numbers of Gulls, Razor-bills, and Guillemots. The stay of these stragglers, sometimes extending over a period of two or three weeks, appears to be regulated by the supply of food, which consists entirely of dead animals procured in the immediate neighbourhood. Fish of various kinds are often thrown up by storms, and at once attract the Glaucous and Great Black-backed Gulls, which are constantly prowling along the shores. During the Eagle's stay, however, they are compelled to resign all the best fish to his exclusive use, and content themselves with a half-putrid wolf fish (*Anarrhichas lupus*) or sea-devil (*Lophius piscatorius*), numbers of which are thrown overboard by the fishermen as useless, and in time are stranded on the beach. About twenty miles north of this locality one or two Cinereous Eagles have been obtained in a much quieter though perhaps more dangerous residence—the estuary of the Tyne, where, although an abundant supply of both game birds and wild fowl could have been secured, the same partiality for harmless plunder has characterized their visits. Lord Binning, who has for several years closely observed the ornithological features of East Lothian and the neighbouring county of Berwick, informs me that a female bird of this species 'was shot at Tyninghame, in December 1868, by Mr. Inglis, gamekeeper. It had been for several days in the fir-woods near the shore, and appeared to have lived entirely on fish during that time, as three or four good-sized fish, in various stages of decomposition, were found in its stomach. Though in good condition and plumage, this was evidently not an aged or even an adult bird, as shown by the uniform dark colour of the plumage, and the light colour of the bill.'

"Between East Lothian and the eastern portion of Caithness there are a few occasional resting-places for this species, but no permanent haunt until we reach the Orkney and Shetland Islands. 'Formerly both Golden and White-tailed Eagles were very common, if not abundant, throughout that northern group. Even at the time of Bullock's visit in 1812, their frequent onslaughts on the farmyard apparently caused much anxiety among the inhabitants, who must have appreciated in no small degree the laudable efforts of that early representative of the British collector to reduce their number."

In a footnote, Mr. Gray states that a keeper in Skye shot fifty-seven Eagles on a single estate, and another in West Ross-shire shot fifty-two in twelve years, besides taking numbers of both eggs and young. Captain Cameron, of Glenbrittle, also informed him that he had seen as many as sixty-two Sea-Eagles killed in Skye; and, as Mr. Gray justly remarks, no species of Eagle could long survive such persecution. In Thompson's time it was to be met with in many parts of Ireland; but since then it has been greatly reduced in numbers, and, so far as I can

learn, appears to have become rare. According to Professor Reinhardt (Ibis, 1861, p. 4) it is "very common in South Greenland all the year round, in North Greenland only in summer." Professor Newton records it as generally distributed throughout Iceland in the vicinity of water, but nowhere very abundant. It breeds there, and, according to Faber, remains during the winter. Captain Feilden writes that it "no longer breeds in the Færoe Islands, and is only an occasional winter visitant. The boatmen when passing Lindholm do not fail to point out the rock on which this Eagle had its eyry, and to which the child was carried as related by Landt:—'The mother hastened to the rock where the nest was built, and which is so steep towards the summit that the most expert bird-catchers have never ventured to climb it; but the poor woman arrived too late; for the child was already dead, and its eyes torn out.' Svabo remarks that Eagles must have been frequent formerly, as their beaks were ordered to be given as tax, according to royal resolution of the 21st November, 1774. Several names of places show this also, as Arnafjord by Ordevig, Arnefiord, in Bordoe, &c. In Færoe the man who takes the bill of an Eagle to the sheriff is exempt for life from *Noebbetold*, or bill-tax. Herr Müller has in his collection the leg and foot of one of this species which was captured in the winter of 1860, on the island of Sandoe, during a severe snow-storm; the bird was crouching under a rock, protecting itself from the wind and snow, when observed by a man, who, stealing up, threw himself on the Eagle and wrung its neck." In Scandinavia it is common, and, according to Mr. Collett, breeds numerously along the coast of Norway up to the North Cape and the Varanger fiord, and nothing is more common than to see one seated on the pinnacle of a rock. They are, he writes, "more abundant, probably, than anywhere else, off the coasts of Trondhjem and Nordland; and it is never absent from the 'Fuglebjerge' or breeding-stations of the sea-fowl, where it sits on the rocks, whence it may at any moment swoop down and secure a bird. The sea-fowl take but little heed of this powerful robber, each one trusting that he may not be made the next victim. Compared with the Golden Eagle the present species is far more numerous. It seldom penetrates far up the fiords, but keeps to the coast and the islands, being a resident. On the Swedish side it is tolerably common in the north during the summer season, but rare in the south, where, during the winter, it is not unfrequently found."

In Finland I frequently met with it, and have seen it in almost every part of the country I visited, from the Russian frontier below Wyburg up to the Lapland frontier; and the late Magnus von Wright informed me that it is not uncommon near Kuopio, where I personally did not see it. In Northern Russia it is common; and Sabanäeff informs me that he found the Sea-Eagle commoner than the Golden Eagle in the Government of Jaroslaf, but not so common in those of Moscow, Tamboff, and Smolensk. It is found throughout the Government of Perm, except in those parts which are bare of wood. Meves met with it on the Ladoga and Onega Lakes, at Cholmogory and Archangel, everywhere common. He gives a list of the remains found at a nest of this species, which contained two young birds about five and eight days old. The remains were those of the following Ducks, viz. two female Eiders, one female Red-breasted Merganser, one female Goosander, and two Long-tailed Ducks, one of which was alive, but had its wings and legs broken. Of the others some were fresh killed, some half-eaten, and of the rest only the skeletons remained.

On the coasts of the Baltic provinces and of North Germany it is by no means rare; and I

have frequently seen it when travelling in those countries along the coast-roads. I frequently obtained both birds' eggs from the neighbourhood of Danzig and Stettin; and amongst skins received from there I had one with an unusually white head. In Denmark it is said by Kjærbölling to be of not uncommon occurrence, especially during the winter season. In Belgium, De Selys states, it is rare, occurring now and then on the Meuse and Scheldt; but it is said to breed in lofty rocks on the former river. Mr. Labouchere informs me that "it only visits Holland during the winter, and is then chiefly found along the coast; in severe winters, however, it has also been shot further inland. A few years ago a relation of mine caught a fine specimen of this bird in a Snipe-net on the dunes, and made a present of it to the Zoological Society of Amsterdam, in whose gardens it is still living. Baron von Droste Hülshoff says that young birds visit the Island of Borkum regularly during the winter season, usually arriving about the middle of October and leaving in April, the earliest date when he has met with it being the 10th of October. It visits the coasts of France during winter, young specimens alone having, so far as I can learn, been met with there. In Provence it remains throughout the winter, especially in the Basse-Camargue, where in former years, when that district was more thinly inhabited, it is said to have bred; and it likewise occurs amongst the marshes near Perpignan, where a fine adult bird was obtained not long ago. In Portugal it has also been met with; and Dr. E. Rey states (J. f. O. 1872, p. 141) that he saw one on the coast to the west of the Villa do Bispo. In Spain it is said by Lord Lilford to be rare. He himself never saw it in that country; but Señor Graells met with it more than once in New Castile, and he heard of its being seen near Valencia. Mr. Saunders, who also states that it is rare, says that he saw one specimen shot near Cadiz in the winter season. Brehm did not observe it, and merely says that, "according to Graells, it is occasionally seen on the shores of the Tajo and Jarama." Passing eastward, again, I find that, according to Bailly, only young birds in the first or second year's plumage have been met with in Savoy, and it is but rare. In the interior of Italy, and along the west coast also, this species seems to be rare; but on the shores of the Adriatic it is the commonest of the large Eagles. In Sicily it is rather rare; and although several undoubted specimens are on record, yet a Sicilian species is still amongst the desiderata of the Museum at Palermo. Professor Doderlein relates that a friend offered a large sum to a peasant of Carini who had just killed one, but he insisted upon eating it. Salvadori states that he has seen an adult bird which was obtained in the interior of the Island of Sardinia. Lord Lilford writes (Ibis, 1860, p. 5) that this Eagle is often to be seen, though it is not abundant, in Epirus and Acarnania. A pair were almost always to be observed about the Bay of Butrinto in the autumn and winter. His Lordship took a nest near Prevesa on the 17th March, 1857. Lindermayer writes that it is rare in Greece; but Von der Mühle records it as very common during the winter on the inland lakes, as for instance on Lake Zikeri, five hours N.W. of Thebes. The latter gentleman states that it breeds in Rumelia; and Dr. Krüper informs me that he has met with it breeding in Acarnania and the Cyclades. In Southern Germany it occurs here and there, and is said by Dr. Anton Fritsch to be found regularly in Bohemia. Formerly it used to breed near Frauenberg. I saw it on the Danube, and in 1866 climbed up to a nest in Wallachia, near Orsova, but was too late, as the young ones had been taken out by some peasant lads, and I only found pieces of the egg-shells. Messrs. Elwes and Buckley speak of it as being common in Macedonia and on the coasts of the Black

Sea, and they found it breeding in February. Mr. C. Farman met with it in Bulgaria, where, he says, it is common on the shores of the Devna Lake, being most numerous during the early spring. Professor von Nordmann, writing respecting its occurrence in Southern Russia, says that "its habits in the steppe country are so far modified that it is scarcely recognizable as the same species; for whereas in the north it is a true inhabitant of the sea-coast and river-banks, and is seldom observed far from these, its haunts are here quite different. In the southern steppes of Russia it frequents solely the interior, and very rarely approaches the water, but feeds on the small steppe-birds and the various species of mammals, in the spring and summer probably exclusively on various sorts of mice.

"It frequently hunts after *Spalax pallasii* and *Spalax typhlus*, which it seizes with great adroitness, without seeing them, out of the mounds which they are busy raising; therefore its claws are in the summer season generally found to be soiled with earth. In the dozen specimens I have dissected I have never found a fish, but invariably the remains of mammals and birds; and sometimes, though rarely, I have observed in them the remains of lizards. In the steppes it perches on the posts placed to mark the versts, and on small mounds, whence it pounces on the 'sousliks' (*Spermophilus citillus*). In default of trees large enough to bear its nest, it places it on the ground. In winter it approaches human habitations." Ménétries records it from the shores of the Caspian; but Canon Tristram did not meet with it in Palestine. It inhabits North-east Africa, where, according to Von Heuglin (Orn. N.O.-Afr. p. 52), it is a resident in the lagoons of Lower Egypt, being most frequently met with at Lake Menzaleh; but he never met with it on the Nile itself, nor on the shores of the Red Sea. He gives a most interesting account of its nidification in the reed-beds of Lake Menzaleh, too long for insertion here. Mr. Howard Saunders sends me the following note on its nidification there:—"It may interest you to know that the Hon. Murray G. Finch-Hatton found several nests of this species upon the ground in the reedy marshes of Lake Menzaleh, and shot the old birds from two of them. I have examined these specimens, which are very white about the head, but not more so than many European examples. The nests were large structures, to which it was necessary to wade knee-deep in mud and water, rendering it no easy matter to get at them; and the young were nearly able to fly in January."

In North-west Africa it appears rare, as Loche writes that he very seldom met with it in Algeria, and never saw an adult bird. It occurs in the Canaries; and Mr. Godman writes (Ibis, 1871, p. 166) as follows:—"Webb and Berthelot do not seem to have observed this Eagle, though Dr. Bolle says that he met with it in the Island of Lobos in May 1864 in some numbers. He also mentions it as a coast species in Teneriffe. In the month of April I frequently watched a pair of these birds three or four miles to the eastward of Orotava, near the coast." Mr. Godman adds that he never met with it elsewhere amongst the islands, nor has it been recorded from Madeira.

To the eastward the Sea-Eagle is found as far as Japan and Kamtchatka. Eversmann records it from Bokhara; Mr. Blanford obtained a specimen at Gwadar, in Persia; and Mr. A. O. Hume obtained numerous specimens amongst other birds received from Sindh, and he procured young birds at Etawah. Mr. Blyth states (Ibis, 1872, p. 87) that he never met with it in Lower Bengal.

Severtzoff writes (Turk. Jevotnie, p. 63) that it is found throughout Turkestan in the winter, except in the south-western part of the country, and also occurs during migration at an altitude of from 3000 to 6000 feet above the sea-level. It occurs in Siberia; and Von Middendorff states that he watched a Sea-Eagle through a telescope on the Taimyr in 75° N. lat., which he believes to have been the present species, as the tail-feathers were, he could distinguish, white. On the 10th July he shot a young male *Aquila albicilla* near the south coast of the sea of Ochotsk, which, in its small size, agreed with the Japanese bird described by Temminck and Schlegel in the 'Fauna Japonica.' Schrenck states that it was the commonest Eagle in the Amoor, and remarks that the East-Siberian bird is generally of a darker colour than the European bird, or than specimens procured in Kamtchatka. In measurements the Siberian bird agrees pretty well with the European bird. Von Schrenck states that the natives of the Amoor assure him that the breeding-season of this Eagle is late, much later than March or April, which is the breeding-season in Europe. Radde found a young bird (near the mouth of the Ussuri) scarcely fledged early in July. In some portions of the country traversed by him it was common, in others very rare, or not observed at all. In the East Sajan Mountains it is not found; nor did he hear of it at Kossogol. On Lake Baikal it was common, much more so than *P. haliaetus*. In the Transbaikal country it was occasionally found in the Selenga valley, and only becomes common on the Lower Amoor. Père David states that it is tolerably numerous during migration in North China; and Mr. Swinhoe writes (P. Z. S. 1871, p. 339) that it is met with from the river Yangtsze northwards, and is only occasionally seen in the south; an immature bird flew on board a ship in the harbour of Swatow, and was captured. Temminck and Schlegel record it from Japan; and I am indebted to Mr. J. H. Gurney for the following note on its occurrence in Mantchuria:—"In 1863 the crew of a British vessel (the 'Egmont') cut down a tree in Hornet Bay, Nookoolian Harbour, coast of Mantchuria, about 41° N. lat. and 136° E. long.; the tree had on it an Eagle's nest containing two Eaglets, which were brought alive to England and given to me. They proved to be *Haliaëtus albicilla*; one of them is still living, and in the possession of my son [J. H. G., jun.]; the other (a male), after attaining its adult plumage, died at the Zoological Gardens, and its skin (unmounted) is in the Norwich Museum." It occurs on the Aleutian Islands and in Kamtchatka, being, according to Kittlitz, uncommon in the latter country. In America it does not occur, being replaced by *H. leucocephalus*.

Though a powerful and strong bird, the Sea-Eagle is not so bold and active as most of the other Raptores, and unless pressed by severe hunger will rarely venture to attack any animal larger than a hare, or perhaps a lamb, unless it may venture to try and hasten the dissolution of some weakly sheep. It feeds principally on stranded fish, wildfowl of various sorts, rabbits, or carrion, most frequently, I should say, on the latter when obtainable. It is not only looked on with suspicion by the shepherds as being occasionally destructive to lambs, but it is viewed with equal aversion by the game-preserver; for it is a most arrant poacher, and destroys not a few hares and grouse. Mr. Robert Gray, however, says that according to his experience it feeds chiefly on stranded fish or dead sheep found on the moors, or occasionally a salmon left by some scared otter. It is most frequently met with on the coast, but also occurs inland, especially, it would seem, near the banks of large rivers. Still the sea-coast seems to be the place most congenial to it; for here it finds food in most abundance, and can at any time procure sea-birds, on

which it frequently feeds. Mr. Collett informs me that almost every large breeding-place of sea-fowl is also inhabited by a Sea-Eagle, preying at pleasure on his weaker neighbours, who appear to take but little heed of the danger which continually threatens them.

The cry of this Eagle is a clear, shrill yelp, which in still, fine weather may be heard at a considerable distance, being much louder and shriller than the scream of the Golden Eagle. It would appear that so soon as the young are full-grown they disperse, and lead a wandering life for some time, the old birds remaining throughout the year in the same locality.

The Sea-Eagle is rather an early breeder, and, it would seem, breeds much earlier in the south of Europe than in the more boreal countries. The nest is placed either on a bare rock or else in a lofty tree; in the latter case it prefers a tree which has but few branches except at the summit, a pine tree being usually selected where these trees are common. Usually the nest is built in the vicinity of the coast; but Mr. Collett informs me that a nest was found in Sætersdal, Christiansand Stift, fully sixty English miles from the sea, in which, he adds, a fresh mackerel was found. I saw a nest not far from the Danube, in Wallachia, in a locality, however, very far from the coast. Several nests I have examined in different parts of Europe were all rather heavy structures, composed of sticks, lined with dried grass and moss. Mr. Collett describes a nest found by him at Salsvand, in Namdalen, Norway, as follows:—"The nest was 3 feet high, and measured about 6 feet in diameter. At the top it was almost flat, the exterior being composed of bare fir branches about an inch thick. The inside was lined to the very edge with a thick layer of moss, straws, dry grass, stalks of *Calluna vulgaris* and *Empetrum*, and even *Fucus vesiculosus*, in spite of the distance from the sea being over three miles." Some most excellent notes on the breeding of this Eagle may be found in the 'Ootheca Wolleyana,' to which work I may refer my readers for the best information I know of respecting the nidification of this species in Scotland. Judging from these notes the eggs are usually deposited late in April or early in May, two eggs forming the full complement. I possess eggs from Greenland, Pomerania, and Hungary, all of which are pure white, the shell being somewhat rough in texture; and in size they vary from $2\frac{3}{4}\frac{1}{0}$ by $2\frac{1}{4}\frac{1}{0}$ inch to $2\frac{3}{4}\frac{9}{0}$ by $2\frac{1}{4}\frac{3}{0}$ inch. Some of the continental naturalists say that the eggs of the Sea-Eagle are occasionally slightly spotted and marked with colour; but out of numbers I have seen I never saw a single one with any mark on it, except from nest-stains.

The specimens figured are, on the one Plate an adult bird now living in the Zoological Society's Gardens, and a nestling from Hungary, and on the second Plate an immature female from Greenland—the two latter, as well as the adult birds described, being in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Sarepta, January (*H. F. Möschler*). *b*, ♀ *ad.* Sarepta, February (*H. F. M.*). *c*, *juv.* Denmark, 1864. *d*, ♀ *juv.* Greenland (*A. Benzon*). *e*, *pull.* Banat, Hungary, April 25th, 1870 (*Hodek*).

E Mus. Brit. Reg.

a, *pull.* Orkneys (*Bullock*). *b*, *ad.*, *c*, *juv.* Shropshire (*Bullock*). *d*, *ad.* Kent (*Col. Montague*). *e*, *f.* Greenland (*Dr. W. Durrant*). *f*, *ad.*, *g*, *h*, *i*, *juv.* Greenland (*Holböll*).

Genus CIRCAETUS.

Aquila apud Brisson, Orn. i. p. 443 (1760).
Falco apud Gmelin, Syst. Nat. i. p. 295 (1788).
Accipiter apud Pallas, Zoogr. Rosso-As. i. p. 354 (1811).
Circaëtus, Vieillot, Analyse, p. 23 (1816).
Circœetus apud Vigors, Zool. Journ. i. p. 322 (1825).
Buteo apud Savi, Orn. Tosc. i. p. 27 (1827).
Circaëtos apud C. L. Brehm, Vög. Deutschl. p. 36 (1831).

This genus contains five species, four of which are restricted to the Ethiopian Region, whereas the fifth, *Circaëtus gallicus*, is found in the Palæarctic Region, ranging over the whole of the Indian peninsula into Timor and Flores.

In habits the Short-toed Eagles assimilate closely with the Buzzards, being rather heavy, sluggish birds, possessing but little of the spirit of the true Eagles; but in captivity they are wild and untamable. On the wing they resemble the Buzzards, but appear rather stronger in their flight. They feed chiefly on reptiles and fish, more especially on snakes and lizards, and but seldom on small mammals and birds. They breed in trees, constructing a tolerably large nest of twigs and branches, which they frequently line with green leaves. Only one, large, white egg is deposited, which is rather rough in surface of shell. Occasionally they breed in cliffs, and then construct their nest in a bush or small tree; but as a rule they nest in large trees.

Circaëtus gallicus, the type of the genus, has the bill stout, strong, decurved from the base, the cutting-edge of the upper mandible widening at the base; nostrils oblong, oblique, placed in the anterior part of the cere, slightly covered with stiff bristles; wings rather long, but not reaching to the end of the tail, the first quill about equal to the seventh, the second rather shorter than the fifth, the fourth longest, the first four quills deeply notched on the inner web; tail moderate, nearly even; tarsus rather long, this and the feet covered with rough roundish scales; toes stout; claws strong, curved, acute.



SHORTTOED EAGLE.

ad. & nestling.



SHORT-TOED EAGLE.

CIRCAËTUS GALLICUS.

(SHORT-TOED EAGLE.)

Aquila pygargus, Brisson, Ornith. i. p. 443. no. 11, "Gallia" (1760).
Falco gallicus, Gm. S. N. i. p. 295. no. 52 (1788, ex Brisson).
Aquila leucamphomma, Borkhausen, Teutsche Ornithologie, Heft 9, pl. 1 (1800–12).
Falco leucopsis, Bechst. Orn. Taschenb. ii. p. 460 (1802).
Aquila brachydactyla, Wolf, Meyer & Wolf, Taschenb. deutsch. Vögelk. i. p. 21 (1809).
Circaëtus (Jean-le-Blanc), Vieillot, Analyse, p. 23. no. 11 (1816).
Falco brachydactylus (Wolf), Temm. Man. d'Orn. i. p. 46 (1820).
Circœetus brachydactylus (auct.), Vigors, Zool. Journ. i. pp. 322, 336 (1825).
Buteo gallicus (Gm.), Savi, Orn. Tosc. i. p. 27 (1827).
Circaetus gallicus (Gm.), Cuvier, Règne An. i. p. 328 (1829).
Accipiter hypoleucus, Pallas, Zoogr. Rosso-As. i. p. 354. no. 27 (1831).
Circaëtos leucopsis (Bechst.), C. L. Brehm, Vögel Deutschl. pp. 36, 1024, pl. iii. f. 2 (1831).
Circaëtos anguium, C. L. Brehm, op. cit. p. 37 (1831).
Circaëtos gallicus (Gm.), Keyserl. & Blasius, Wirbelth. Europa's, p. xxix, and p. 137. no. 19 (1840).
Aquila gallica (Gm.), De Selys Longch. Faun. Belg. p. 53 (1842).
Circaëtos meridionalis, A. Brehm, Cab. J. f. O. Erinnerungsschrift, p. xvii (1855).
Circaëtos leucopsis (Bechst.), C. L. Brehm, Vogelfang, p. 11, "Europe" (1855).
Circaëtos hypoleucus (Pallas), C. L. Brehm, loc. cit. "Western Asia to South-eastern Europe" (1855).
Circaëtos orientalis, A. & L. Brehm, Vogelfang, loc. cit. "South-eastern Europe, Western Asia, North-eastern Africa" (1855); id. Naumannia, 1856, p. 203, "Egypt;" J. f. O. 1856, p. 334, note; id. Allg. deutsche naturh. Zeitung, ii. p. 59 (1856).
Circaëtos paradoxus, C. L. Brehm, Allg. deutsche naturh. Zeitung, ii. p. 61, "East Prussia" (1856).
Circaetus gallicus (Gm.), Jerdon, Birds of India, i. p. 76. no. 38 (1862).
Circœetus gallicus (Gm.), Salvadori, Ucelli di Sardegna, p. 21. no. 8 (1864).

(The above by Lord Walden.)

Short-toed Eagle, *Serpent-Eagle*, English; *Aigle Jean-le-blanc*, French; *Nattern-Adler*, *Bussard-Adler*, *Schlangen-Adler*, German; *Aguila parda*, *Serpentario*, Spanish; *Biancone*, Italian; *Hogarb abiad*, Arabic.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 413; Werner, Atlas, *Rapaces*, pl. 20; Kjærb. Orn. Dan. taf. 2;

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Frisch, Vög. Deutschl. taf. 76; Fritsch, Vög. Eur. taf. 6. fig. 6; Naumann, Vög. Deutschl. taf. 15; Gould, B. of Eur. pl. 13; Susemihl, Vög. Eur. taf. 35 *a*.

ad. suprà dilutè brunneus, plumis nonnullis centraliter saturatioribus et vix purpurascente brunneo nitentibus; remigibus primariis in pogonio externo et in pogonio interno dimidio apicali saturatè brunneis, in pogonio interno ad basin albis, secundariis in pogonio externo sordidè brunneis et in pogonio interno albis saturatè brunneo fasciatis: rectricibus centralibus, et reliquis in pogonio externo, sordidè brunneis, his in pogonio interno albis, rectricibus omnibus fusco trifasciatis, ad apicem pallidioribus vel albis: corpore subtùs albus, gutture et pectore brunneo striatis, hypochondriis et abdomine laterali vix brunneo fasciatis: rostro nigricanti-corneo, cera et pedibus sordidè grisescenti-carneis, illo vix flavicante lavato: iride flavâ.

Juv. adulto similis, sed corpore suprà paullo saturatiore, tectricibus alarum pallidiore marginatis, gulâ et gutture magis brunneo notatis, gutture imo cum pectore sordidè brunneis, et abdomine conspicuè brunneo transfasciato.

Adult Female (Genoa, 30th August). Upper parts dark earth-brown, some of the feathers rather darker in the centre, and having a faint purplish brown gloss; quills on the outer web and terminal portion of the inner web dark brown, and white on the basal half of the inner web, secondaries duller brown than the primaries on the outer web, the inner web white, with several broad dark brown bars; central rectrices dull brown, with three indistinct large dark brown bars, remaining rectrices similarly coloured on the outer web, but with the inner web white, the bars being dark brown, all the rectrices tipped with white; underparts white, feathers on the throat and breast with a broad central brown stripe, those on the lower flanks and sides of the abdomen sparingly barred with brown; lores, forehead, chin, and sides of head covered with long black bristles; under wing-coverts white, marked with brown; under tail-coverts white; beak blackish horn; cere and legs dirty flesh-colour, the former with a yellowish tinge; iris yellow; tarsi bare, covered with a quantity of almost hexagonal-shaped scales, those on the feet being smaller and rounder. Total length about 27 inches, culmen 2·1, wing 21·5, tail 12·5, tarsus 4·1.

Adult Male (Secunderabad, India). Similar to the above, but smaller; the underparts very slightly marked with brown, sides of the head almost white; crown with all the bases of the feathers white, which shows through the brown very conspicuously; forehead nearly pure white; upper parts generally rather paler than in the bird last described. Culmen 2·05 inches, wing 20·4, tail 11·4, tarsus 4·0.

Young (Spain, August). Resembles the adult female above described, but has the wing-coverts with rather paler margins, the throat more marked with brown, the lower part of the throat and breast almost uniform dark earthy brown, and the abdomen very broadly barred with a similar shade of brown.

Nestling. Resembling the young bird above described, but with underparts much darker brown, this colour covering a larger area. One I have figured, now in the British Museum, has remains of down in the plumage.

Obs. Most of the adult specimens from India I have had an opportunity of examining were much less marked on the underparts than those from Europe; and I doubted much if the European bird is ever so little marked as the Asiatic Short-toed Eagle; but Mr. J. H. Gurney writes to me from Nutwood, Reigate, as follows:—"In this house there are two specimens of *Circaëtus gallicus*, which were bought in the flesh in the market at Rome, about twenty-five years ago, one of which is, I think, as white on the underparts as any Indian specimen that I have seen. As it is cased-up I can only examine one

side of the bird; but judging from this, I should say that the entire undersurface is pure white, except that the feathers on the throat and upper part of the crop have very narrow shaft-marks, not wider than the shaft itself; about four or five feathers on the side of the crop have the brown shaft-mark spreading a little on to the webs of the feather, and one single feather on the flank has a brown semicircular mark."

The Short-toed or Serpent-Eagle inhabits Central and Southern Europe, Northern Africa and India, and has been recorded from as far east as the island of Timor.

It has not occurred in Great Britain or Scandinavia, but is tolerably widely distributed throughout the continent of Europe. Commencing in the eastern portion, I find it in Central Russia. Mr. L. Sabanäeff records it, on the authority of Daniloff, as often met with during migration in the Government of Orloff. It breeds at Litva and in the district of Serdobol, in the Government of Saratoff; but Professor Bogdanoff has not met with it on the banks of the Volga. Meves did not meet with it in Northern Russia; nor has it occurred in Finland. Borggreve says that it is a rare though tolerably widely distributed species in North Germany during the summer, but is very rare in the north-western portion, as he only refers to one specimen having been obtained in the Lüneburg district. Mr. A. von Homeyer records it from the Pfalz, Prince Max von Wied from Westerwald; and it occurs in Pomerania and also in Ober-Lausitz, where it is seen regularly, and breeds not unfrequently. Gloger speaks of it as not uncommon in Silesia during the summer; Borggreve himself saw it in Upper Silesia; and Boeck records it from Prussia. According to Dr. Rey, an old female was killed in the Burgholz, near Halle, in October 1857.

In Belgium it is of very rare and accidental occurrence; and De la Fontaine says the same as regards Luxemburg; but in France it is said by Degland and Gerbe to be tolerably abundant throughout the country, especially in Anjou and Dauphiné, where it is resident; and Jaubert and Barthélemy-Lapommeraye speak of it as being the most common species of Eagle in Provence. Professor Barboza du Bocage includes it in his list of birds found in Portugal; and it occurs commonly in Spain. Major Irby informs me that it is plentiful in Andalucia; and Mr. Howard Saunders (Ibis, 1871, p. 60) states that it is "abundant in winter in the marshes, and by far the commonest breeder in the wooded districts" of Southern Spain. Lord Lilford writes to me as follows:—"The Serpent-Eagle is common, but not, according to my observation, by any means the most common Eagle in Southern Spain. I cannot say whether it is a constant resident, or a spring visitor to the country; but at all events it breeds in Andalucia, notably in the Cotos so often mentioned, on the right bank of the Guadalquivir. I have met with this species in Old and New Castile and Catalonia, besides, as above mentioned, in Andalucia, as also in Corfu, the island of Sardinia, and near Tunis. It is occasionally met with near Genoa, whence I am now writing; and I have received a specimen from Rome."

It is said to breed in Savoy, where, however, it is very rare; but Salvadori considers it tolerably abundant in Tuscany and in the Roman Campagna, in which districts it breeds, but few remain during the winter. About Modena it is, according to Professor Doderlein, extremely rare, although somewhat more numerous round Bologna. The same excellent authority states that it is generally distributed throughout the island of Sicily. Cara says that one of three specimens in the Museum at Cagliari was shot in that neighbourhood; but Salvadori (J. f. O.

1865, p. 61) says that he never met with it in Sardinia. Mr. C. A. Wright (Ibis, 1864, p. 45) records it from Malta as "very rare, and not of annual occurrence. A fine specimen in my collection was killed at Gozo at the end of August 1857;" and he refers (Ibis, 1870, p. 489) to another specimen, a female, as having been obtained in November 1866. Lord Lilford observed it in the island of Corfu; and it is recorded from Greece by the various authors on the ornithology of that country. Dr. Krüper (J. f. O. 1862, p. 440) refers to it as only occurring in scattered pairs. He first observed it in April 1860, near Dragmana, on Mount Parnassus, and afterwards on Taygetos; Von der Mühle refers to it as found on the damp plains, far from any woods; and Mr. H. Seebohm writes to me that, according to his experience, "it is one of the rarer Eagles, both in Greece and Asia Minor. To both countries it is a summer visitor, arriving towards the end of March. Though a small bird for an Eagle in the hand, it looks more important on the wing, and may occasionally be seen sailing over the plains, though much less frequently than the Vulture and larger Eagles. It is rarely seen at any great elevation on the mountains, breeding in, or only just above, the vine- and olive-regions."

In Southern Germany it occurs here and there, but is everywhere a rare bird. The Ritter von Tschusi-Schmidhofen sends me the following notes on its distribution in the Austrian dominions:—"In Bohemia, according to Palliardi, the forester Koch several times observed it in the forest of Hardenberg, where it nested for several years in succession. After he had killed the two old birds, no more were seen for long. Some years ago, however, one specimen was shot in Rostock, near Prague. Fritsch says that Lokaj got an old and a young specimen in the summer, and Osterdal shot one on the 16th September, 1864, in the Seminer district, near Prelouc; and in 1853 a specimen was killed in Krammerburg, near Sayau. It seems, however, not to be found in the Böhmerwald, as I have not seen it in the Museum of Wohrad. In Moravia Mr. Schwab obtained only three specimens during thirty years. One of these was killed in September 1853; it was an adult female, and was shot near Mistek, on a lake, and had grasshoppers and lizards in its stomach; the second, a young male of the year, was obtained in 1858, in a wood between some lakes; and the third specimen, a male, was killed in November 1854, on the little rivulet of Holeschau. Dr. Schwab also obtained two specimens from the Neutil district. According to Von Pelzeln there are two specimens in the Vienna Museum from Lower Austria—a male from Hietzing, obtained in 1824, and a female, which was shot at Hirschgstem. Finger refers to a pair in the Forest-School Collection at Mariabrunn, which were shot together by a forester as they were fighting in the air for a snake; and in Finger's own collection are:—a male, shot in August 1848, at Wolkersdorf; a male, shot in 1849, at Schönbrunn; and a female, shot at Schönkirchen on the 27th October, 1854, which last he presented to the Vienna Museum. In Lower Austria it is very rare: one specimen is in the Kremsmünster Museum; and Finger records a male, shot at Ems in September 1854, and now in the Museum at St. Florian.

"In the Tyrol, according to Althammer, it is rare in the northern districts; but in Southern Tyrol five or six are killed every autumn in August or September. Early in August a shepherd obtained a young bird on Monte Baldo. According to Herr P. Gredler it is not rare on the Mittelberg, near Bozen, and breeds in the Montikler forest. Bruhin states that one was shot in June 1868 near Bludenz, in the Vorarlberg district. In Styria the late E. Seidensacher found this Eagle breeding annually for several years in succession near Cilli; and in Krain, according

to Freyer, it occurs not unfrequently near Idria; there are also five specimens in the Museum at Laibach. Fiedler speaks of it as rare in Croatia; but it breeds there. In the Agram Museum there is an old bird, and a nestling only a few days old.

"In Hungary it is not common. Nagy possesses two killed near Ujlák and Mocsonok (Neutra Comitat), Wagner shot one on the mountain of Sztyborno a. Poprad, Brusek obtained one in May 1868 at Murány, and Schablick one from Vereskö. I saw two, obtained in that district, in the collection of Kusmik, a shoemaker, at Eperies. Baron Löbenstein saw it occasionally in Lower Hungary; Fritsch obtained one from near Weisskirchen; and Hermann states that he found a nest on the 12th June, 1873, near Bazias, in an oak-forest; but as he says that the nest contained two young ones, his statement is open to doubt. Von Stetter obtained it near Piski, on the Strell, in Siebenbürgen; and, according to Von Czáto, a female was shot near Russmarkt on the 22nd June, 1862, a male in August 1862 at Koncza, and a third on the 11th June, 1871, at Petroseny. It certainly breeds in that country. According to Count Wodzicki it breeds in Galicia, in the Polish mountains in the Cracow district, and near Olkusch; and Schauer met with it at Wielka-Porebo."

Messrs. Elwes and Buckley (Ibis, 1870, p. 70) never obtained a specimen in Bulgaria, but say that they are almost positive that it occurs there; and M. Alléon found it breeding in the forest of Belgrade. It is very numerous on the Bosphorus during migration. Dr. Krüper and Mr. Seebohm both inform me that it occurs, though not numerously, in Asia Minor; but Canon Tristram writes (Ibis, 1865, p. 253) that it is "beyond all doubt the most abundant of all the Eagle-tribe in Palestine, from the early spring. In winter it seems to be more scarce, and is probably partially migratory. I observed it in December among the gardens and orange-groves of Sidon; but did not satisfactorily identify it again till the beginning of March, from which time it overspread the whole country. Being strictly a reptile-eater, it probably withdraws to the Arabian districts for the two or three months during which the lizards and snakes hibernate. In the coast-plains there were abundance of frogs to be found at all seasons; and the Short-toed Eagle is therefore more accurately described as a wanderer than as a true migrant. It prefers the neighbourhood of woods near the cultivated plains to the truly forest districts. In its breeding-habits it varies, choosing generally some low ledge in a wady, but sometimes also building a great platform of sticks in the top of a large oak or terebinth. The first egg we took was in a wady on Carmel, on March 23rd, quite fresh; the second in a wady near Heshbon, east of the Dead Sea, on April 30th, equally fresh; after which we obtained several others, not yet incubated, so late as to the 10th of May. One egg we took was prettily spotted; all the others were white. On one occasion the sitting bird we shot from the nest was ascertained on dissection to be a male. In Africa I have found two eggs in the nest; but in Palestine we never found more than one. The *Circaetus* is a fearless bird, and more easily approached than any other of the large Raptores, sitting composedly on a conspicuous point of rock, or on the top of an isolated tree, till the sportsman is almost within gunshot. I do not know a more magnificent-looking bird as it sits with its great flat head bent down on its shoulders, its huge yellow eyes glaring around, and the bright spotting of its breast and abdomen as distinct as that of a Missel-Thrush. It is very noisy, and always betrays the neighbourhood of its nest by the loud harsh scream with which the male and female vociferously pursue each other,

rising into the air and making short circling flights, after which they suddenly drop down, one to the nest, the other to a post of observation hard by. They will often dash down to the fields below, sweep for a few minutes like a Harrier, and then, seizing one of the great black ground-snakes or a *Tropidonotus* in a ditch, sit down and occupy some minutes in killing the reptile, after which they carry their prize away in their claws, not, like many other Eagles, devouring it on the spot."

Captain Clark-Kennedy writes to me:—"Throughout the peninsula of Sinai I met with it in very limited numbers, and saw two pairs in the Wâdee Feirân, and several near the convent of Mount Sinai and on Jĕbel Catherina, where the monks told us it bred; but as it has never, so far as I am aware, been known to nest on the ground, this statement is very unlikely to be correct." In Egypt, according to Von Heuglin (Ibis, 1860, p. 412), it makes its appearance in pairs or small flocks in the month of September, and goes upwards along the banks of the Nile to the prairies of Kordofan, Sennaar, &c., where it stays during the winter, returning through Egypt in February and March. It is not unfrequently seen during the autumn sitting on low hills and sand-banks, sometimes in shallow water hunting for reptiles which are driven out of their holes and retreats by the increasing waters of the river. In the prairies this species is found sometimes at a very great distance from water; and single specimens appear to stay all the summer within the tropics, as I infer from an individual which I killed in Eastern Sennaar in the middle of May." He also states (J. f. O. 1862, p. 39) that he obtained it in the Bogos country. Captain Clark-Kennedy, who also observed this bird in Egypt, informs me that he "met with it not more often on the outskirts of the desert than near the river Nile, and it appeared rather more frequently on the western bank than the other; but to what reason to attribute this I can form no opinion. It generally appeared in only very limited numbers, and could nowhere be termed common. It evidently prefers hilly country, and was observed by myself in the desert country, about ten miles due west of Edfou; and about the same distance from Thebes, on the same side of the Nile, I found it tolerably numerous among the mountains." Antinori met with it at Kordofan and on the White Nile, and says (J. f. O. 1866, p. 123) that it is rare in Eastern Senaar, where it probably comes from the Arabian coast. In North-western Africa it is common, and, according to Loche, breeds numerously in Algeria. Canon Tristram only met with it once in the desert of Souf, but says that the Arabs were well acquainted with it; and Mr. Salvin, in his article on the ornithology of the Eastern Atlas (Ibis, 1859, p. 182), writes as follows:—"The first time I met with this species was just on entering the Arab village of Testour, between Tunis and Kef. One flew over my head, and, coming between me and the sun, threw a shadow which attracted my attention. I brought it down by a lucky shot without dismounting from my horse. A few days afterwards another was killed. The Short-toed Eagle was observed on many occasions in all the districts visited, but is perhaps more numerous about Souk Harras than elsewhere. The first nest of this species we obtained was brought from Blad el Elma, a village to the south of Djebel Dekma; it contained two eggs, both which had been incubated some time, so that the long bare tarsi and large eyes of the embryo left little doubt as to the identity of the species. Of these eggs one had slight indications of colouring, a feature I have never observed in other specimens. The eggs are usually deposited in March; but some birds defer laying till April." Major Irby informs me that it is plentiful in Morocco, and he took a nest near Larache in a lentiscus bush,

the base of the nest touching the ground. According to Hartlaub it has been obtained in Senegal; but it is possible that it may not have been the present but some allied species.

To the eastward it is found through Central Asia to Northern China. According to Severtzoff it occurs throughout the southern portion of Turkestan during the summer, and breeds at an altitude of from 1000 to 8000 feet in the Thian-Shan and Karatau Mountains. It is also, he says, met with on the Susamir, Son-kul, Chatir-kul, Aris, and the lower part of the Syr-Darja rivers. Dr. Jerdon (B. of I. i. p. 76) says that it is spread all over India in suitable localities; and other authors on Indian ornithology confirm this. Mr. A. O. Hume (Rough Notes, p. 217) says that "it lays in the plains of Upper India in January, February, and March, and, according to Mr. R. Thompson, in April and May in the Gurhwal forests."

Père David says that he once saw a specimen which had been obtained near Peking, in Northern China; but Mr. Swinhoe assures me that it could not have been the present species that was seen by Père David, and he thinks it may very possibly have been *Spizaëtos orientalis*. Professor Schlegel, however, states that there is a specimen in the Leyden Museum which was obtained on the Island of Timor in February 1829.

In its habits the present species bears much closer affinity to the Buzzards than the true Eagles. It is a heavy, rather sluggish bird, and seems to have but little of the fierceness of the Eagle; but in captivity it is wild and untamable, and never appears to become in the least degree reconciled to confinement. On the wing it bears some resemblance to a Buzzard, but may be distinguished by its white underparts. I have only seen it in a wild state in Styria, where, in company with the late Mr. Seidensacher, I obtained its egg in 1866 a few miles from the town of Cilli, and frequently saw the old bird sailing in circles round the tree on which the nest was built, but at a considerable altitude, uttering every now and then a plaintive, rather wild cry. It feeds on lizards, snakes, and small amphibians, and possibly to some extent on fish. Dr. Jerdon writes that in India it will eat any thing—rats, weakly birds, crabs, frogs, centipedes, and large insects—and he has seen it strike at a wounded hare, and that it will occasionally carry off a wounded Teal or Duck. Mr. Elliot, whom he quotes in his catalogue, writes that it "pounces on snakes and guanas (*Monitor*). My Meer Shikaree has seen them on the ground with their claws on the snake's head, its body coiled round the bird's wings, in which state the herd-boys sometimes kill them. The Yerklees say it has a figure of the gods' chuckram under each wing, by which it prevents the snake going forward." Lord Lilford writes to me that it "has a slow, flapping, somewhat owlish flight, but in fine weather may be observed soaring at a great elevation, with outspread and apparently motionless wings. I never observed this Eagle in pursuit of any bird or small mammal; it appears to feed principally, if not entirely, on reptiles and (I believe) fish. In the crops of two shot from their nests in the Coto de Doñana in May 1872 we found nothing but the remains of snakes (*Tropidonotus tessellatus*, Günther, and *Cœlopeltis lacertina*, Wagler); lizards also form a large part of the diet of these Eagles." His Lordship had a bird alive which was sent to him from the Crimea, and whose favourite food was fish.

The Short-toed Eagle is a tree breeder, usually placing its nest at a considerable altitude in a tree standing somewhat clear from the rest; but sometimes, in rocky places, it is built on a bush or low tree close to the ground. The only nest I have seen *in situ* was the one near Cilli, which

was placed in a tolerably lofty fir tree on the mountain-side, and was constructed of sticks, chiefly of the beech and fir trees, with but little lining, and contained a single large white egg.

Lord Lilford writes to me that he has "at different times found six nests of this bird in the Spanish Cotos, all situated in the centre of the crown of a pine tree, often at no great height from the ground; the nest is a very large, rather flat structure of thick sticks and twigs, lined with coarse grass; we never met with more than one egg or young bird in a nest. The Serpent-Eagle has a shrill, twittering cry, rather an insignificant note for a bird of its dimensions. Both sexes take their turn at incubation, and sit very close. I could not find out any very distinctive settled name for this species in Andalucia: perhaps it is most commonly known as '*Aguila parda*;' but in the Coto de Doñana it will, I think, since our visit to that locality, be recognized by any of the gamekeepers as '*Serpentario.*'" My friend Mr. Carl Sachse, who has found it breeding near Neuwied, sends me some notes, which I translate as follows:—"This species nested in 1862, and previously, about a German mile from Neuwied, in a beautiful beech-wood situated in a hilly district. It left, however, in consequence of the persecution on the part of Prince Max von Wied and his foresters, who took an egg and a young bird. It did not return to its old quarters until 1870, when it again nested there, and the young bird was shot. In 1871 I had the nest examined on the 27th April for the third time, and the single egg taken out. The nest measured 50 centimetres in width, 8 in depth, was built of beech twigs, those at the bottom coarse, and thinner ones towards the top; in the inside of the nest were two small green twigs of beech, 13 centimetres long. The nest was placed about 60 feet high, almost in the crown of a beech tree, there being only 5 feet of growth above it. I had the nest examined several times afterwards; but the birds had left that part of the country. The egg, which is very large, measures 78 millimetres by 65 millimetres, and is equally rounded towards each end. Unblown it weighed 173·7 grammes, and blown 14·2 grammes. In colour it is bluish white, washed with yellowish brown and reddish brown spots, one of which is quite brownish red."

I am also indebted to Mr. H. Seebohm, of Sheffield, for the following notes on the nidification and habits of this bird as observed by him in Greece and Asia Minor during the time he was collecting there in company with Dr. Krüper:—"It is usually a tree-building bird; but in Parnassus the olive-trees in the valley are too low to afford adequate security, and the pines on the mountains are a couple of thousand feet too high above the level of the sea, and it is therefore obliged to resort to the cliffs. It still, however, preserves its tree-building instincts, and chooses some tough shrub growing out of the face of the cliff, whereon to build its nest. The egg (I have never heard of more than one) is laid towards the end of April. On the 5th May, 1873, I found a nest of this Eagle in Parnassus, upon which the bird was sitting close. We were stopping at Kastri (the ancient Delphi); and my Greek servant Costa took me to a cliff, where an Egyptain Vulture was in the habit of breeding year after year, a couple of miles on the road to Arachoba. My guide shouted and yelled; but no Vulture was to be seen; only a few Kestrels, Blue Thrushes, and Syrian Nuthatches were scared away by the noise. After some time we fired off a gun, when out flew an Egyptian Vulture from a cave halfway up the cliff, and at the same time a Short-toed Eagle took wing from a nest on a tree growing out of the face of the cliff higher up. Costa was the best climber I had ever seen. He was a peasant from Acarnania, and had been accustomed to climb the cliffs almost from childhood to rob the wild

bees' nests of their honey, for which his home was, two thousand years ago, and still is celebrated. He took off his sandals, and in about three quarters of an hour brought me two splendidly coloured and perfectly fresh Egyptian Vultures' eggs, whilst I watched him almost with hair standing on end. When he held out the eggs for me to see, he was so far above me that I was unable to see them without my pocket telescope. The nest of the Eagle was inaccessible from below; but Costa climbed down to it a few days afterwards with the assistance of a rope, and brought me up the egg, which proved to be slightly incubated. In 1872 I saw a nest of this bird in an exactly similar locality, about a fortnight later in the year, at Burnabat, near Smyrna; but I had some difficulty in blowing the egg, it was so far incubated. This Eagle no doubt occasionally feeds upon small birds; but in Greece and Asia Minor its food is principally lizards and snakes. In the valley of the Nymph, between Smyrna and Sardis, I started one of these birds almost at my feet, holding in its claws a snake at least a yard long. It flew upwards in a spiral curve, rising rapidly until I lost sight of both Eagle and snake in the blue sky."

Although the Short-toed Eagle is, as a rule, a tree breeder, instances are on record of its having placed its nest on the ground; and Mr. A. von Homeyer (J. f. O. 1863, p. 265) refers to one where an officer found a nest placed on the ground on an isolated rock-pinnacle, and shaded by a small olive-tree, in Algeria, near Mount Matifou, and containing a single large white egg.

Mr. Andrew Anderson sends me the following note on the nidification of this Eagle:—"On the 10th of March last year (1873) I was one of a party engaged in doing a little miscellaneous shooting in a belt of Dhāk Jungle, when my friend Mr. Bryson drew my attention to an Eagle that had just flown off her nest. The tree selected, if such it can be called, though the tallest in the jungle we were shooting in, was only an overgrown thin sapling, and scarcely strong enough to bear the weight of my climber.

"The nest contained one egg; and although there was no doubt as to the ownership of it, I was anxious to secure any of the parent birds. We accordingly withdrew the beaters for half an hour to allow her to return, which she did, but again sailed off the nest before we got within a hundred yards. A second and a third attempt proved equally unsuccessful, notwithstanding we all (three of us) approached the tree under cover of the brushwood from different directions. Our movements, moreover, were not heard, as, owing to a fall of rain that very morning, we could walk about the jungle without making the slightest noise. On my eventually sending up a man to bring down the egg, the Eagle hovered overhead sufficiently close to decide identification, though keeping well out of shooting-range. The nest was small, and in shape, size, and position very similar to that of the Wokab (*Aquila vindhiana*, Franklin); but I have never before experienced such wariness on the part of any bird while incubating. Only the other day a pair of Wokabs attacked my climber in the most desperate manner while he was examining their nest, which contained only a pair of tolerably well incubated eggs; and as to Bonelli's Eagle, *Lithofalco chiquera*, *Micronisus badius*, &c., &c., they rarely move till the hand is on the nest.

"The whole jungle was in full blossom; and the nest itself was actually surrounded with clusters of red and black flowers. The egg has an insignificant, mean appearance, quite characteristic of the bird itself: it measures 2·7 by 2·1, and has, of course, no indication of any colouring-

matter, but is a good deal soiled from the green leaves which formed the inner lining of the nest; the inside membrane is sap-green."

My friend the late Mr. E. Seidensacher published in the 'Transactions' of the Zoological and Botanical Society of Vienna for 1862 some excellent notes on the breeding of this bird in Styria, which, however, are too long to translate *in extenso*. He says that it arrives at its breeding-haunts about the middle of March; and then three or four might be seen soaring over the nesting-places; but some days later only one pair remained; and it appears that only the one pair ever bred in that district. When in company with Seidensacher at Cilli, in Styria, in 1866 I obtained its egg on the 13th April, and possess another also taken out of the same nest on the 21st April, 1863, by Mr. Seidensacher, and one obtained in Spain on the 21st May, 1872, by Lord Lilford's collector. All these eggs are white, with a pale bluish tinge, unspotted, roundish in shape, and have a rather rough granulated shell, somewhat resembling that of the Sea-Eagle's egg. In size they vary from $2\frac{2}{40}\frac{2}{40}$ by $2\frac{5}{40}$ inch to $2\frac{2}{40}\frac{9}{40}$ by $2\frac{8}{40}$ inch.

The specimens figured are:—on the one Plate an adult female from Genoa, and a young bird from Spain; and on the second Plate an old male from India and a nestling, in the British Museum, from Tunis, these being the specimens described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Secunderabad, India. *b*, ♀ *ad.* Genoa, August 30th, 1869. *c*, ♂ *juv.* Spain, August (*Major Irby*). *d*. Deccan, Central India, September 1868 (*H. Feilden*).

E Mus. J. H. Gurney, jun.

a, ♂. Spain, April 22nd, 1870 (*Irby*). *b*, ♀. Secunderabad, India.

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Coto del Rey, Seville, April 12th (shot from nest) (*H. S.*). *c*, ♀ *juv.* Granada, August 1872 (*H. S.*).

E. Mus. G. E. Shelley.

a, ♂ *ad.* Nubia, April 7th, 1870 (*G. E. S.*).

E Mus. Brit. Reg.

a, ♂. Montpellier (*Baron Laugier de Chartreuse*). *b*, ♀ *ad.* Italy. *c*, *pullus.* Tunis (*Fraser*). *d*, *juv.* Bogos Land (*Esler*). *e*, ♂ *ad.* Mount Carmel (*H. B. Tristram*). *f*, ♀ *ad.* India (*J. R. Reeves*). *g*, ♀ *ad.* Kattiawar, India (*Capt. J. Hayes Lloyd*). *h*. Madras (*Dr. Jerdon*). *i*. Behar. *k*. Nepâl (*B. H. Hodgson*).

Genus NISAETUS.

Aquila apud Vieillot, Mém. Linn. Soc. Paris, p. 152 (1822).
Falco apud Temminck, Pl. Col. i. pl. 288 (1824).
Nisaetus, Hodgson, Journ. As. Soc. Beng. v. p. 227 (1836).
Spizaetus apud Blyth, Journ. As. Soc. Beng. xii. p. 301 (1843).
Eutolmaetus apud Blyth, op. cit. xiv. p. 174 (1845).
Tolmaetus apud Blyth, op. cit. xv. p. 5 (1846).
Pseudaetus apud Bonaparte, Cat. Parzud. p. 1 (1856).
Aquilastur apud L. Brehm, Allg. deutsch. natur. Zeit. ii. p. 53 (1856).

This genus, in which are only three species, is represented in the Palæarctic, Ethiopian, Oriental, and Australian Regions, only one species being found in the Western Palæarctic Region. Mr. Sharpe (Cat. Accipitr. Brit. Mus.) refers *Aquila pennata* to this genus; but it appears to me that it is more correct to group this species with the true Eagles. The birds belonging to the genus *Nisaetus* differ in general appearance not a little from the true Eagles, and somewhat resemble the larger Hawks; hence the Germans call the type of the genus (*Nisaetus fasciatus*) Habichts-Adler, or Hawk-Eagle. They appear therefore to form a very fair connecting link between the true Eagles and the genus *Astur*.

In general habits they are far more noble than the true Eagles; for they never touch carrion, but pursue and capture their prey like the Hawks and Falcons. They are strong and swift on the wing, and feed on birds of various kinds, being very partial to waterfowl, which they pursue and strike on the wing. Some naturalists say that they will occasionally feed on fish; but this appears to be doubtful. They nest in cliffs, and construct their nests of sticks and twigs, lining them with green leaves, and deposit two tolerably large roundish eggs, which are bluish white or pure white slightly marked with rufous.

Nisaetus fasciatus, the type of the genus, has the bill high, strong, stout, decurved from the base; nostrils oval, placed in the anterior portion of the cere; wings rather long, but not nearly extending to the tip of the tail, first quill shorter than the seventh, the second about equal to the fifth, the fourth longest; tail long, even; legs very long, the tarsus feathered to the toes, which are large and stout; claws very large, strong, curved.



J.G.Keulemans del

Mintern Bros. imp

1 BONALLIS EAGLE.
OLD MALE.

2 BOVTED EAGLE.
OLD FEMALE.



BONELLI'S EAGLE.

Nesting.

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BONELLIS EAGLE.

NISAETUS · FASCIATUS.

NISAETUS FASCIATUS.

(BONELLI'S EAGLE.)

Aquila fasciata, Vieill. Mém. Linn. Soc. Paris, p. 152 (1822).
Falco bonelli, Temm. Pl. Col. i. pl. 288 (1824).
Aquila intermedia, Boitard, Ois. d'Eur. (1825), fide Degl. & Gerbe, Orn. Eur. i. p. 32 (1867).
Aquila bonelli (Temm.), Less. Man. d'Orn. i. p. 83 (1828).
Nisaetus grandis, Hodgs. Journ. As. Soc. Beng. v. p. 230 (1836).
Nisaetus niveus, Jerd. Madr. Journ. x. p. 69 (1839).
Spizaetus grandis (Hodgs.), Blyth, Journ. As. Soc. Beng. xii. p. 301 (1843).
?*Aquila nipalensis*, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Aquila rubriventer, Hodgs. tom. cit. p. 81 (1844).
Eutolmaetus bonelli (Temm.), Blyth, Journ. As. Soc. Beng. xiv. p. 174 (1845).
Tolmaetus bonelli (Temm.), Blyth, op. cit. xv. p. 5 (1846).
Nisaetus strenuus, Jerd. Ill. Ind. Orn. pl. 1 (1847).
Falco ducalis, Licht. fide Bp. Consp. Gen. Av. p. 14 (1850).
Aquili wiedii, A. Brehm, Naumannia, 1855, p. 25.
Pseudaetus bonelli (Temm.), Bp. Cat. Parzud. p. 1 (1856).
Aquilastur bonelli (Temm.), L. Brehm, Allg. natur. Zeit. ii. p. 53 (1856).
Aquilastur wiedii, L. Brehm, tom. cit. p. 54 (1856).

Habichts-Adler, German; *Aigle à queue barrée*, French; *Aguila blancuzca*, *Aguila perdicera*, *Aguililla*, *Aguila blanca*, Spanish; *Aquila del Bonelli*, *Achiloneddu*, Italian.

Figuræ notabiles.

Temminck, *l. c.*; Werner, Atlas, *Rapaces*, Suppl. pl. 2; Fritsch, Vög. Eur. taf. 6. figs. 4, 5; Naumann, Vög. Deutschl. taf. 341; Gould, B. of Eur. pl. 7; Jaub. & Barth. Lap. Rich. Orn. pl. 4; Jerdon, *l. c.*; Schlegel & Susemihl, Vög. Eur. taf. 18; Marm. Mem. Accad. Tor. pl. i.

♂ *ad.* corpore suprà saturatè fusco, capitis et dorsi plumis ad basin albis, his, scapularibus et tectricibus alarum pallidè brunneo vix marginatis, capitis et nuchæ plumis eodem colore magis marginatis: remigibus nigro-fuscis vix purpurascente nitentibus, primariis in pogonio interno extùs dimidio basali albis saturatè fusco marmoratis et fasciatis, secundariis in pogonio interno vix grisescente albido marmoratis: tectricibus alarum superioribus dorso concoloribus sed ad basin sordidè griseo marmoratis: caudâ sordidè griseâ nigro-fusco transfasciatâ: capitis lateribus pallidè rufescenti-cervinis nigro striatis: corpore subtùs albo ubique striis guttiformibus notato: abdomine vix rufescente cervino lavato: tibiæ et tarsi plumis albis rufescente cervino lavatis et nigro-fusco striatis, subcaudalibus albis pallidè rufescente fusco fasciatis et lavatis: hypochondriis nigro-fusco apicatis: rostro fusco, basi sordidè cæruleo: cerâ pedibusque flavis: iride aurantiaco-brunneâ.

♀ *ad.* mari similis sed major.

Juv. adulto similis sed corpore suprà saturatiore vix umbrino lavato et corpore subtùs sordidè ferrugineo ubique nigro-fusco notato.

Adult Male (Tangier, April). Upper parts dark brown, the feathers on the head and back only brown on the terminal portion, all the rest being pure white, which colour shows through here and there; the brown terminal portion of the feathers on the back, scapulars, and wing-coverts slightly edged with light brown, those on the head and nape being more broadly and lighter edged; quills blackish brown, with a slight purplish gloss, the primaries on the basal and outer half of the inner web white, barred and marbled with dark brown; secondaries on the inner web slightly marbled with greyish white; wing-coverts like the back, but on the basal portion marbled with dull grey and not white; rectrices greyish brown on the outer web, and light whitish brown or grey on the inner web, except the two central ones, which are brownish grey on both webs, all being crossed by six or seven bars and one very broad subterminal band of dark blackish brown; sides of the head pale sandy yellow or rufous buff, striped with black; underparts white, marked all over, but less on the breast than elsewhere, with elongated drop-shaped stripes of black, and on the abdomen slightly washed with pale reddish buff; feathers on the tibia and tarsus white, washed with rufous buff, and striped with blackish brown; under tail-coverts white, barred and marbled with dull light reddish brown; edge of the under surface of the wing and axillaries variegated blackish brown and white; larger under wing-coverts dull blackish, slightly tipped with white; feathers on the flanks tipped with blackish brown; bill blackish horn, dull bluish at the base; cere and feet yellow; iris orange brown. Total length about 26 inches, culmen 2·1, wing 18·6, tail 11·6, tarsus 3·8.

Adult Female. Resembling the male, but larger.

Young Female (Butrinto). Resembles the male last described, but has the upper parts much more umber-brown in shade of colour, and the entire underparts are dull reddish, tolerably closely striped with blackish brown, the throat and upper breast being dull dark foxy red; the feathers on the tibia and tarsus dull rufous, narrowly striated with blackish.

Nestling (Acarnania, March 1873). Head and neck covered with close white down, through which on the crown and nape the brown feathers are appearing; back, wings, and tail dark earth-brown, with a faint purplish gloss; the wing- and tail-feathers, which are very short, having lighter tips; underparts partly covered with white down and partly with rusty red feathers, most of which have a dark blackish brown central stripe.

Obs. Besides my own specimens, I am indebted to Canon Tristram for the loan of a beautiful series of specimens of this Eagle, embracing all stages of plumage from the nestling to the very old bird: and Mr. Saunders has also placed at my disposal some beautiful specimens in his collection. A young bird in Canon Tristram's collection, which is in the first feather-plumage, resembles the nestling above described, but is rather younger. A young female, shot by Canon Tristram himself at Biskra, has the upper parts very dark, and the underparts rather peculiarly marked, the feathers being white at the base and reddish towards the tip, the centre of the terminal portion being covered by a broad drop-shaped blackish brown mark; the feathers on the abdomen are also marbled, even on the basal portion, with dull reddish brown. Another immature bird, obtained by Mr. W. E. Brooks, of Etawah, has the upper parts dull earthy brown, and the underparts pale rufous, the feathers narrowly striated along the centre with blackish brown; the abdomen and thighs being very pale rufous buff, the latter unstriated. The adult birds are like the male above described; but several in both collections, especially two in that of Mr. Saunders, are very white, and but little marked on the underparts.

One in Canon Tristram's collection, a male from Etawah, is in very old plumage. In size the male vary as follows—culmen 2·0–2·1, wing 18·2–18·6, tail 11·0–11·6, tarsus 3·8–3·85 inches; and the females—culmen 2·15–2·4, wing 19·1–20·5, tail 11·5–12·0, tarsus 4·0–4·2 inches. The iris seems to vary greatly according to age; or possibly there may be individual differences; for it is said to be nut-brown, fiery orange, orange-brown, or yellow.

THE range of this, as of almost all our European Eagles, is large, as it is found in Southern Europe and Northern and Central Africa, ranging eastward to India.

It has not been met with in Great Britain or in any part of North Europe; and Borggreve states that there is no record of its occurrence in Northern Germany; but it is tolerably common in the south of France, frequenting there, as elsewhere, mountain-ranges within a reasonable distance of marshy districts and lakes inhabited by wild fowl, on which it, to a large extent, feeds. Baron J. W. von Müller remarks (J. f. O. 1856, p. 213) that, though it is now tolerably common in Provence, it was formerly unknown there, and he is at a loss to account for its appearance. In Portugal it is stated by Professor Barboza du Bocage to be common; and Mr. A. C. Smith adds (Ibis, 1868, p. 435) that it is especially numerous at Coimbra. It is numerous in Spain; and, according to Colonel Irby, it is resident in the southern portions of that country, and one pair nest annually on the Rock of Gibraltar. Mr. Howard Saunders speaks of it as being the commonest rock-breeding Eagle in the country; and Dr. A. E. Brehm says (Allg. deutsch. naturh. Zeit. iii. p. 436) that he found it not uncommon in pairs and families throughout the whole of Southern and Central Spain, and observed it at Jativa, Murcia, Granada, and Madrid in the mountains. When in Spain I observed it near Madrid, and think that I once saw it in the hills not far from Barcelona.

Herr A. von Homeyer says (J. f. O. 1862, p. 248) that he found it rare in the Balearic Islands, and in fact only once observed it, on the 6th May. It is found in Italy. Salvadori states that it is rather rare on the mainland of Italy; but in the island of Sicily it is, according to Doderlein, tolerably well known, and it is said to breed near Bronte. It is also found in Sardinia, where, Salvadori says (J. f. O. 1865, p. 60), "it is common. I obtained an immature bird, and saw an old one at Domus Novas. One of the four specimens in the Cagliari Museum, a fully adult bird, has the abdomen white, and on the shaft of each feather a narrow black streak. Specimens in this plumage, however, are rare." Mr. A. B. Brooke, who also met with it commonly in Sardinia, says (Ibis, 1873, p. 149) that he has repeatedly seen this species hunting over the plains and round the "stagnos" of Oristano, in Sardinia, and that it is also abundant in the mountains. In the Greek Archipelago and in Greece itself it is a tolerably common species. Lord Lilford writes (Ibis, 1860, p. 4):—"I observed this species near Butrinto, at Livitazza, at the mouth of the Kalamas, and at Phanari, at the mouth of the Acheron. I always observed it in pairs, and hunting rocks near the marshes." Von der Mühle speaks of it as being one of the commonest Eagles in Greece; but Lindermayer obtained comparatively few specimens during the space of twenty-five years. Dr. Krüper, however, writes to me saying that it occurs in Acarnania and the Parnassus, where it breeds, and is rather common than otherwise.

It has twice been met with in Southern Germany, in Bohemia, as recorded by Dr. Anton Fritsch, who says (J. f. O. 1871, p. 176) that the first occurrence took place, according to

Mr. Hüttenhacker, in April 1862, in the Maxhofer district, near Purglitz, and the second near Neustrachic. One of these specimens Dr. Fritsch examined, and he describes it as being in immature plumage. Mr. Hudleston observed it on the Lower Danube; but Messrs. Elwes and Buckley did not meet with or hear of it in Eastern Turkey. It appears to be extremely rare in Southern Russia, as Von Nordmann only cites a single instance of its occurrence near Odessa. According to Sabanäeff a small Long-tailed Eagle has been observed in the Ufa Ural, which he thinks may probably be the present species. Ménétries does not include it in his catalogue of the birds inhabiting the Caucasus; but Canon Tristram met with it in Palestine, and writes (Ibis, 1865, p. 252) as follows:—"Bonelli's Eagle is rather common in every part of the country, but seems to avoid the plains, being much attached to the wadies and rocky terraces with which the country abounds. It perches on some conspicuous point of rock looking out for its prey, and after a short circling excursion will again and again return to the same post of observation. I take it to be more truly a game-killing Raptor than any of the preceding Eagles, and less addicted to carrion feeding than any of its congeners. The Rock-Pigeons are its favourite quarry in winter; and it preys much on the Turtle Doves in the Ghor and the plain of Gennesaret. I have also seen it pursue Kites, apparently with the intent of robbing them. Most of the birds we saw were in the adult plumage; but in early spring we noted several with the ruddy breast of the second year's plumage, which evidently had not paired. It frequents the gardens behind Sidon and Jaffa, but is more generally found in the wooded hill-region about Carmel, Tabor, and the Lake of Galilee, from which places we procured the eggs in April, as well as two nests of one egg each in the neighbourhood of Girach, east of the mountains of Gilead. It does not appear to lay till the end of March, and then generally a single egg. These are either white, or with the faintest russet spots. One nest, which contained two eggs both fairly coloured, baffled all our attempts at its capture. It was comfortably placed under an overhanging piece of rock near the top of the cliffs of Wady Hamam, in such a position that no rope could be thrown over to let down an adventurous climber; and yet from another point, which projected nearly parallel to it, we could look into the nest with longing eyes. The old birds seemed perfectly aware of the impregnability of their fortress."

It occurs in North-east Africa; but the different authors do not agree as to its being rare or otherwise. Captain Shelley writes (B. of Egypt, p. 206) that he never met with it in Egypt or Nubia. Von Heuglin obtained a single specimen in winter, and says that it is not common in autumn, winter, and spring at the lakes in Lower Egypt. Antinori, however, speaks of it (J. f. O. 1866, p. 121) as being rare in the northern portion of Central Africa, but common in Egypt and Nubia; he saw two specimens obtained near Cairo, and shot one himself on the Blue Nile. It is also stated by Keyserling and Blasius to inhabit Arabia; and Mr. Wyatt says (Ibis, 1870, p. 11) that it is "occasionally seen in the mountainous parts of the Sinaitic peninsula."

In North-western Africa it is much more common than on the eastern side, and is said by Loche to be common in Algeria; and Mr. Taczanowski, writing respecting its occurrence in Algeria, says:—"It is repeatedly met with in the mountains, still oftener in the desert. It gives chase to hares and houbaras, of which we were more than once eye-witnesses. Once, in the neighbourhood of the desert-forest of Sada, we saw, in company with Count Alexander Branicki, a female pounce upon a hare (*Lepus isabellinus*), killing it immediately, so that a male

bird, who was on the spot in a moment, was prevented from taking his share in the prize. On another occasion, during a chase of houbaras by Falcons, we noticed that the latter refused to seize the prey; the reason of this being that a Bonelli's Eagle suddenly dropped down from above, killing the houbara in an instant. In such cases one of these birds will allow a rider to approach almost close to him; but he is more shy towards those on foot."

Colonel Irby informs me that, according to M. Favier, it is the most common Eagle near Tangier, where it is resident, though some migrate north in February and return in July; and Mr. O. Salvin, who met with it in Tunis, writes (Ibis, 1859, p. 182) as follows:—"While staying at Sousa, in the Regency of Tunis, in February, an immature bird of this species was brought to me by an Arab, half-dead. We saw others in the Regency, where it appeared to be more numerous than further to the westward. In the Souk-Harras district I did not meet with it, except on one occasion, when I found a decaying specimen lying on a heap of rubbish opposite the door of the hotel of that town. A pair frequent, and, according to an informant at Tunis, annually breed near, the ruins of Utica; one of these birds I saw when visiting the site of that city." Mr. Tyrwhitt-Drake says (Ibis, 1867, p. 423) that it sometimes breeds at Tetuan, and also at Cape Spartel. It is met with far south in Africa; it has been recorded from Senegal; and Mr. Andersson (B. of Damara Land, p. 7) writes as follows:—"I have obtained examples of this species at Objimbinque, the mouth of the Onanès river, Ball's Port, the Omaruru river, and Ondonga. Its flight is heavy; but when it has once risen to a certain height it soars powerfully."

It is also recorded from South Africa by Mr. E. L. Layard, who says that one (a bird identified by Mr. Gurney as belonging to this species) was shot at Wynberg, this being the only instance on record of its occurrence south of the equator; but there appears to be some doubt as to whether the bird in question really was this Eagle, for Mr. Gurney says (Ibis, 1868, p. 138) he thinks it not impossible that it may prove to be a female of *Spizaetus spilogaster*.

To the eastward it is found as far as India; but Mr. Swinhoe says that it has not been met with in China. Severtzoff does not include it in his work on the ornithology of Turkestan; and I do not find it recorded in the outlying districts before reaching India proper, where, according to Dr. Jerdon (B. of India, i. p. 68), it is found "from the Himalayas to the extreme south, but only in hilly or jungly districts in general, though it is occasionally seen in cultivated country and near tanks, if not very distant from some hilly region. I have observed it chiefly on the Neilgherries, on the crest of the Western Ghâts, in Central India, and occasionally in the Carnatic and Deccan." Mr. A. O. Hume met with it in Sindh, and writes (Stray Feathers, i. p. 158) as follows:—"One, two, or more pairs of this fine Hawk Eagle are to be met with about every large lake in Sindh, making terrible havoc amongst the smaller water-birds, and carrying off wounded fowl before one's eyes with the greatest impudence. They breed in the province, and, *inter alia*, in the interior of the Khelat Hills, in places where perennial streams issue from these. I killed a fine female in the interior of the Nurree Nai at the end of January from her nest, which then contained two young ones, just able to fly. I saw another nest higher up the same stream, placed, like the first, on a shelf of a rocky cliff overlooking the water; this was inaccessible, but it contained, I could see, young birds. Another nest I found in the Gaj, which

contained, I think, eggs (very late for this species); but it also was quite inaccessible." Mr. W. E. Brooks says that it breeds in the plains of the Etawah district, in the N.W. Provinces; and Lieutenant Beavan says (P. Z. S. 1868, p. 397) that Colonel Tytler obtained it at Simla in September 1866, and that Dr. Scott procured it at Umballah; and Mr. G. T. Vigne says (P. Z. S. 1841, p. 6) that he obtained it "in Cashmere and the Lower Himalaya." Southward it has been met with in Ceylon, where, according to Mr. E. L. Layard, it was obtained by the late Dr. Templeton, R.A.

In its habits Bonelli's Eagle is much nobler than most of the larger Eagles; for it seldom or never touches any thing, except what it catches and kills, and is essentially a clean feeder, never touching carrion like the Imperial Eagle and the Spotted and Steppe-Eagles. It appears to be partial to waterfowl, and is usually in the neighbourhood of some lake or piece of water where it can from time to time replenish its larder with a Duck; and it creates great havoc amongst the waterfowl. Mr. Howard Saunders says (Ibis, 1871, p. 62) that its food appears to consist principally of rabbits and (to judge from the feathers found in a nest containing young) of Partridges, Quail, Sand-Grouse, and Little Bustard; but I think it probable that some of these, especially the Sand-Grouse, may have been obtained by robbing some other raptor of its prey. By some naturalists it is also said to feed on fish; but it seems to be unknown whether this is an exception or the rule. Speaking of its range and habits in the North-west Provinces of India, Mr. A. Anderson (P. Z. S. 1872, p. 75) says that it is generally distributed in suitable localities, and affects the straggling belt of dhak-jungle (*Butea frondosa*) which runs at broken intervals through the entire length of the Doab (N. W. P.), marking, as is supposed, the old bed of some river, where each pair seems to hold sway over a circuit of two or three miles, and they apparently do not intrude on each other's hunting-grounds. Though usually a rock-nesting species, he found them building in that country on huge-limbed peepul and burgot trees. It is, he says, essentially a clean feeder, and never consorts with its brotherhood over a dead carcass. He found in the craw of one he shot the leg and foot complete of a Short-eared Owl. Mr. W. E. Brooks also informs me that he has known this Eagle to breed as frequently on trees as in cliffs, if not more often in the former, and that the banyan-tree is the one usually selected by it. With us in Europe it is almost essentially a rock breeder, and I can find scarcely any record of its having selected a tree for the purpose of nidification. One of the best descriptions of the nidification of this Eagle Mr. W. H. Hudleston published in 1860 (Ibis, ii. pp. 291–294), he having found and taken its nest at Ætolico, in Greece. He describes the nest as being placed in a fissure in the cliff, built principally of branches of wild olive, terebinth, and thorn, arranged according to their size—not lined with wool as is usual in Eagles' nests, but the eggs lay on a thin layer of olive-leaves. The eggs he describes as follows:—"The larger is of a smooth texture and bluish white ground-colour, very sparingly marked with rust-coloured spots and minute dottings. The smaller one is of a rougher texture, in colour a dirty white, and without any distinct markings." I am indebted to Colonel Irby for the following notes on the nidification of this Eagle at Gibraltar, where, he adds, never more than the one pair breed, though there are four situations where the nest has been placed:—"In 1869, the Eagles nested on the lower site, about 300 feet from the base of the Rock, which here ends on the steep sand slope south of the village of Catalan Bay.

"In 1870 they used the upper nest, and two eggs were laid; the birds were sitting on the 20th of February; only one was hatched.

"In 1871 the nest of 1869 was repaired, the birds beginning to renew it about Christmas 1870; two eggs were laid by the 6th of February, both of which proved fertile.

"In 1872 the upper nest, that of 1870, was the favoured one: the repairs began on the 20th of December, 1871; the first of the two eggs laid was deposited on the 5th of February. On the 16th of March, both were hatched, making forty days occupied in incubation. Both birds sometimes sit at the same time; but usually they relieve one another. They continually turn the eggs over with their bills; and sometimes, when taken, the eggs bear marks of this in the shape of scratches. The upper part of these nests was always entirely rebuilt with fresh green olive-boughs, lined with smaller twigs of the same. Some of the boughs accidentally dropped I picked up at the foot of the Rock, gnawed through as if by rats. It must have cost the Eagles much time and trouble to procure them, as olive is very hard and tough wood.

"In 1873 I was not at Gibraltar; but on my return in 1874, on the 24th of February, I found that they had built in a fresh situation near the other sites, and that two unspotted bluish white eggs, rather smaller than the usual type, had been taken the day previously by the aid of the same men whom I had employed in 1870. This nest was hid from view of the signal-station by a projection of the rock, and was easily obtained, the cliff there being less than half the height of that where the nest of 1870 is placed. In company with the officers who obtained these eggs, we took another nest of Bonelli's Eagle at some distance from Gibraltar. It was on some rocks where the previous spring they had had the good fortune to take two eggs. We found the nest built in a different situation, easily obtained by the aid of a rope, and very neatly built and lined with twigs and leaves of the cork-tree; it contained two splendid eggs, beautifully marked with red streaks and spots, similar to those taken in 1873, and doubtless laid by the same bird. I was informed that the latter nest was lined with the leaves of the asphodel, and that the spoilers literally walked into the nest. I saw the situation myself; and it was certainly the easiest to reach that I know of, as they usually build on the face of steep cliffs.

"A nest which I found in 1874 contained only one egg, which was addled; but curiously enough the bird was sitting hard on this rotten egg, and I succeeded in shooting the female. This nest was in a hole, and only about 50 feet from the base of the steep cliff in which it was placed, and was lined with twigs and leaves of butcher's broom."

Some excellent notes have been published by Mr. A. O. Hume (Rough Notes, pp. 191–194) on the nidification of this Eagle in India, which I transcribe as follows:—"About a mile above the confluence of the clear blue waters of the Chumbal and the muddy stream of the Jumna, in a range of bold perpendicular clay cliffs, that rise more than a hundred feet above the cold-weather level of the former river, I took my first nest of Bonelli's Eagle. In the rainy season, water trickling from above, had, in a way trickling water often does, worn a deep recess into the face of the cliff, about one third of the way down. Above and below, it had merely broadly grooved the surface; but here (finding a softer bed, I suppose) it had worn-in a recess some five feet high and three feet deep and broad. The bottom of this recess sloped downwards; but the birds, by using branches with large twiggy extremities, had built up a large level platform that projected some two feet beyond the face of the cliff. It was a great mass of sticks, fully half a

ton in weight; and on this platform (with only her head visible from where we stood at the water's edge) an old female Eagle sat in state. This was on Christmas day! It is not many holidays a really working official gets in India, or at least can afford to give himself; and part of mine are generally spent in the open air, gun in hand.

"At the foot of the cliffs is a talus of rough blocks of clay, that it will take many a flood yet to amalgamate; and up to this I crept until I was only sixty feet below the nest. Here, however, I could see nothing of the bird; I shouted and kicked the cliff; the men below screamed, threw fragments of kunker (one of which very nearly blinded me), and by various signs attempted to indicate to Mrs. Bonelli that a change of locality was desirable. Serenely sublime in the discharge of her maternal duties, that lady took no notice whatsoever of the uproar below; accustomed to the passage of noisy boat-crews, and like some other sovereigns, who sit calmly aloft unable to realize that it is really against their sacred selves that the mob beneath is howling, the Eagle never moved. Beaten at our first move, we changed our plan. I crept down the talus, and sent up a man to throw down dust and small pieces of earth (we were afraid of breaking the eggs), in the hopes of driving her off the nest. Luckily the very first piece of earth hit her; then came a shower of sand; and concluding, I suppose, that the cliff was about to fall (as it often does), she flew off the nest with a rapid swoop. Bang, bang, both barrels, 12 bore, No. 3 green cartridge, full in the chest (as the body showed when we skinned it); and yet, with a half fall, like a tumbler Pigeon, through some fifteen or twenty feet, she recovered herself and swooped away as if unhurt, close along the face of the cliff. A hundred yards further I saw a tremor; then in a moment it was clear that she was in the death-struggle; she began to sink, and an instant after fell over and over on to a flat block of clay with almost incredible violence. The dust flew up from where she fell, as if a shell had dropt there; but as a specimen the bird was scarcely injured.

"We had hardly secured the female, after the manner of bird-stuffers, plugging nostrils and shot-holes, stuffing throat and smoothing feathers, when we heard a shrill creaking cry and saw the male coming straight for the nest with a bird (which turned out to be a *Turtur cambayensis*) in his talons. Coming to the nest, the bird seemed surprised to find it empty; it took no notice whatsoever of us; nor did it apparently catch sight of its mate, stretched out with her breast uppermost on the deck-like platform of our barge; but it straightway settled itself down in the centre of the nest and became entirely invisible. Again tiny stones were thrown down; and after standing up, staring proudly round, and stalking to the edge of the platform, where he was hailed with shouts, the male bird flew off slowly, swooping down to within twenty yards of where I sat, and the next moment dropped stone dead with only a loose charge of No. 6 through him. He was a much less bird than the female. She measured 29 inches in length, nearly 70 in expanse, and weighed close on 6 lbs. He was only 26 in length, 62 in expanse, and about 4 lbs. in weight.

"We had now to get the eggs, if eggs there were, because as yet we could only guess and surmise in regard to these. Just above the recess, the cliff bosomed out with a full swell for some two or three feet, effectually preventing any one's looking down into the nest from above, or, except by an accidental cannon in the broad groove, such as my boatman had made by a fluke at the very first shot, from even throwing any thing down into it. Above the swell, the

cliff was as nearly perpendicular as might be; and it really did seem as if getting into that nest would be no easy matter. However, some six feet east of the nest passed a sort of fault or crack, which traversed the cliff at an angle of about 45 degrees; and down this, a stout rope round the waist, with infinite trouble and no little danger, a way was found after all to the nest. Once there, it was a firm platform of sticks at least five feet by three and a half. In the centre of this a circle about twenty inches in diameter was smoothed over with fine green twigs of the Peeloo (*Salvadora persica*); and on this, again, a circle about a foot in diameter was smoothly spread with the green leathery leaves of the same tree; and on these reposed the coveted treasures, two fresh eggs. One of these eggs was bluish white, blotched and speckled very feebly, but thickly towards the larger end, with *pale* reddish brown. It measured 3 inches in length by 2·19 in breadth. The other was almost pure bluish white, with scarcely any traces of markings anywhere, and measured 2·81 in length by 2·13 in breadth. I had always felt morally certain that the egg figured as this bird's by Dr. Bree never belonged to this species, but was probably only a well-coloured *Neophron's*; but now the thing was certain. No aquiline bird that laid the eggs I had in my hand could ever have laid an egg similar to that given in the 'Birds of Europe not observed,' &c.

"A few days later, in similar cliffs a few miles higher up, I found another nest. This time, however, the platform was much larger, and was only about six feet below the top of the cliff. One could look into it without the slightest difficulty; and a Jackal could assuredly have made his way there with ease, as even I got down to it with help and without a rope. The platform of sticks was fully five feet in diameter; there was the same smooth patch of twigs and smaller smooth circle of green leaves, this time of the Peepul (*Ficus religiosa*); and, as in the former case, on the leaves, about five inches apart, lay two fresh eggs. These had a bluish white ground blotched all over, but thinly and very feebly, with pale dingy reddish brown; and they measured, the one 2·62 by 2, and the other 2·51 by 2. The eggs were therefore considerably smaller than those above described, while the female, which I shot as she left the nest, was a much younger and smaller one than the magnificent bird first killed."

Though this Eagle breeds not unfrequently in Spain, its eggs taken in Europe are still, comparatively speaking, a rarity in collections, and I only possess one, collected by Dr. Krüper, which is white, here and there sparingly marked and blotched with pale red, and in size measures $2\frac{27}{40}$ by $2\frac{4}{40}$ inches.

In general character this Eagle is much more of a Falcon than any of its allies; and its flight is also said to resemble that of some of the Falcons or Hawks. Some observers say that it resembles the Goshawk on the wing; and Mr. W. H. Hudleston writes (*tom. cit.* p. 293) as follows:—"The falconine character of their flight was very obvious as they dashed about in the air at a great height, sometimes appearing to make a summerset backwards (reversing the action of the tumbler) in the excess of their indignation against the robbers who were looking at them."

The specimens figured are, on the one Plate a young female from Butrinto and a nearly adult bird from India, on the second Plate a nestling from Acarnania; and on a Plate with a large female of *Aquila pennata*, showing the white mark on the shoulder, I have figured an unusually small male, in very adult plumage, from Tangier, shot at the nest. Excepting the nestling, which belongs to Mr. H. Seebohm, all these specimens are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀. Butrinto, Albania (*H. Barclay*). *b*, ♂. Tangier, April 1874, shot from nest (*H. L. Irby*). *c*, ♂. India (*Marshall*).

E Mus. H. B. Tristram.

a, ♀. Biskra, Algeria, January 1857 (*H. B. T.*), *b*. Egypt, 1865 (*W. Medlycott*). *c*, *juv.* Jerusalem, April 11th, 1864 (*H. B. T.*). *d*, ♀. N.W. Provinces, India, January 23rd, 1868. *e*, *juv.* N.W. Provinces, India, January 1868. *f*, ♂, *g*, ♀. N.W. Provinces, India, January 1867 (*W. E. Brooks*). *h*. N.W. Provinces, India (*Dr. T. E. Jerdon*).

E Mus. Howard Saunders.

a, ♀ *ad.* Alora, South Spain, March 26th, 1869, from nest containing two eggs (*H. S.*). *b*, ♂ *ad.* Alora, South Spain, mate of above, March 30th, 1869 (*H. S.*). *c*, ♂ *im.* Seville, September 26th, 1869. *d*, *pullus.* Sierra Nevada, July 1870.

Genus ASTUR.

Accipiter apud Brisson, Orn. i. p. 317 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 126 (1766).
Astur, Lacépède, Mém. de l'Inst. iii. p. 505 (1800–1).
Dædalion apud Savigny, Syst. Ois. de l'Egypte, &c. p. 33 (1810).
Sparverius apud Vieillot, Nouv. Dict. x. p. 331 (1817).
Buteo apud Fleming, Brit. Anim. i. p. 54 (1828).

By many authors the two genera *Astur* and *Accipiter* have been united; but they form two fairly separable groups. The genus *Astur* is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species being found in the Western Palæarctic Region.

These short-winged Hawks are extremely swift and agile on the wing; and being fierce and rapacious, they are very destructive to game. They feed on small birds of various kinds, Partridges, Grouse, Ducks, Pigeons, Hares, Rabbits, &c. &c., and will often visit farm-yards and seize domestic poultry. They are frequently used for falconry, and are by some falconers held in considerable estimation. They inhabit groves, forests, &c., but are not often seen in open treeless plains away from woods, being chiefly forest-frequenting birds. They breed in woods, placing their nests, which are constructed of boughs and twigs, and lined with finer twigs, on large trees near the edge of a forest; and occasionally they take possession of and repair the deserted nest of some other bird. Their eggs, from two to four in number, are pale bluish or greenish white, without any markings.

Astur palumbarius, the type of the genus, has the bill short, strongly decurved from the base, the cutting-edge of the upper mandible festooned; nostrils oval; wings short, scarcely reaching to the middle of the tail, the first quill shorter than the secondaries, the second shorter than the fifth, the fourth longest; tail long, slightly rounded; legs strong, the tarsus scutellate; toes moderate, the middle toe longest, the lateral ones nearly equal, but the inner claw much larger than the outer; the hind claw very large; claws strong, curved, acute.

The American Goshawk (*Astur atricapillus*) has been included in the British list, three examples having been recorded as obtained in the British Islands—viz. one in Perthshire in 1869 (Robert Gray, Ibis, 1870, p. 292), one in Tipperary in 1870 (Sir Victor Brooke, Ibis, 1870, p. 538), and one at Parsonstown, King's county, in the same year (Basil Brooke, Zool. s. s. p. 2524); but I have not deemed it advisable to include it. This species may be recognized in the adult dress by having a darker head, and the underparts much more closely barred.



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GOSHAWK
ASTUR PALUMBARIUS.

ASTUR PALUMBARIUS.

(GOSHAWK.)

Accipiter astur, Briss. Orn. i. p. 317 (1760).
Accipiter circus major, Briss. tom. cit. p. 398 (1760).
Accipiter circus varius, Briss. tom. cit. p. 400 (1760).
Falco palumbarius, Linn. Syst. Nat. i. p. 126 (1766).
L'Autour, Buff. Hist. Nat. Ois. i. p. 230, pl. xii. (1770).
L'Autour sors, D'Aubenton, Pl. Enl. 461 (1770).
Falco albescens, Bodd. Tabl. Pl. Enl. p. 25 (1783, ex D'Aubent.).
Falco dubius, Sparrm. Mus. Carls. pl. 26 (1787).
Falco gallinarius, Gmel. Syst. Nat. i. p. 266 (1788).
Falco nævius β, Gmel. ut suprà (1788).
Falco incertus, Lath. Ind. Orn. i. p. 32 (1790).
Falco marginatus, Lath. tom. cit. p. 26 (1790).
Falco tigrinus, Beseke, Vög. Kurl. p. 10 (1792).
Astur, Lacép. (*F. palumbarius*, L.), Mém. de l'Inst. iii. p. 505 (1801).
Dœdalion palumbarius (Linn.), Savigny, Ois. de l'Egypte, p. 33 (1810).
Accipiter astur, Pall. Zoogr. Rosso-As. i. p. 367 (1811).
Sparvius palumbarius (Linn.), Vieill. Nouv. Dict. x. p. 331 (1817).
Falco longipes, Nilss. Orn. Suec. i. p. 18, pl. i. (1817).
Buteo palumbarius (Linn.), Flem. Brit. Animals, i. p. 54 (1828).
Astur gallinarum (Gm.), C. L. Brehm, Vög. Deutschl. p. 83 (1831).
Astur palumbarius (L.), C. L. Brehm, op. cit. p. 84 (1831).
Accipiter palumbarius (L.), Macgill. Brit. B. iii. p. 350 (1840).
Astur indicus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Astur paradoxus, C. L. Brehm, Vogelfang, p. 30 (1855).
Astur brachyrhynchus, C. L. Brehm, Naumannia, 1855, p. 269.

Autour, French; *Açor*, Portuguese; *Azor*, *Gavilan*, Spanish; *Astore*, Italian; *El boz*, Moorish; *Hühnerhabicht*, German; *Havik*, Dutch; *Hönsehög*, *Duehög*, Danish; *Duehög*, Norwegian; *Dufhök*, Swedish; *Kyyhkyhaukka*, Finnish; *Jastreb*, Russian; *Tarlán*, Persian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 418, 423, 461; Werner, Atlas, *Rapaces*, pl. 24; Kjærb. Orn. Dan. taf. iv.; Frisch, Vög. Deutschl. tafs. 72, 73, 81, 82; Fritsch, Vög. Eur. taf. 9. fig. 3, and taf. 10. fig. 4; Naumann, Vög. Deutschl. tafs. 17, 18; Sundevall, Svensk. Fogl. pl. 27. figs. 2, 3; Gould, B. of Eur. pl. 17; id. B. of G. B. i. pl. x.; Schlegel, Vog. Nederl.

pls. 11, 12; Susemihl. Vög. Eur. taf. 28; Salv. & Brod. Falc. Brit. Isl. pls. 22, 23; Schlegel & Verster, Traité Fauc. pls. x. xi.

♂ *ad.* pileo nigricanti-schistaceo, fasciâ albâ striis parvulis fuscis adspersâ a fronte supra oculos ad nucham ductâ: nuchâ albâ nigricante schistaceo notatâ: corpore suprà saturatè cinereo-schistaceo: remigibus saturatè fuscis vix cinereo tinctis, fasciis obsoletis fuscis notatis: caudâ cinereo-fuscâ albo apicatâ et nigro-fusco fasciatâ: corpore subtùs albo, in gulâ lineis longitudinalibus, in pectore et corpore imo lineis transversis fuscis ubique notato: cerâ virescenti-luteâ: iride saturatè flavâ: rostro nigricanti-corneo: pedibus luteis, unguibus nigris.

♀ *ad.* mari similis sed major, corpore suprà brunnescentiore.

Juv. pileo et nuchâ fuscis, plumis fulvido marginatis: corpore suprà saturatè fusco, plumis pallidè ochraceo apicatis: scapularibus et supracaudalibus ad basin ochrascente albido fasciatis et notatis, his rufescente fulvido terminatis: remigibus fuscis vix cinereo tinctis et saturatè fusco fasciatis, secundariis albido apicatis: caudâ brunnescenti-cinereâ fusco fasciatâ: corpore subtùs albo cervino tincto, ubique maculis longitudinalibus fuscis, posticè obtusis notato.

Adult Male (Archangel, 27th November). Crown and sides of the head blackish slate; a narrow line over the eye, widening to a patch behind the eye, and reaching nearly to the nape, white, marked with blackish slate; nape dark slate, marked with white; entire upper parts dark ashy slate, the feathers on the fore part of the back with rather darker margins; quills dark brown, with an ashy tinge, obsoletely barred on the outer web, and mottled with greyish white on the inner web; tail ashy brown, with four dark brown bands, and tipped with white; throat white, indistinctly barred with grey, and marked with blackish shaft-streaks; rest of the underparts white, barred with slate-grey; the breast being distinctly marked with shaft-streaks; under tail-coverts pure white; bill bluish horn; cere yellow, with a greenish tinge; iris orange-yellow or bright yellow; legs yellow; claws blackish. Total length about 22 inches, culmen 1·4, wing 13·0, tail 10·0, tarsus 3·1.

Males in my collection vary somewhat in size, the measurements being as follows—culmen 1·3–1·4, wing 12·6–13·0, tail 9·5–10·1, tarsus 3·0–3·1.

Adult Female (Wermland, Sweden). Resembles the male, but is larger, and, as a rule, somewhat browner and duller on the upper surface of the body, and rather more broadly barred on the underparts. In size examples in my collection measure as follows—culmen 1·5–1·7, wing 13·5–14·5, tail 10·5–12·0, tarsus 3·4–3·6.

Young Male (Wermland, Sweden). Crown and nape dark brown, the feathers bordered with light reddish brown, the hidden base of the feathers white; back and wing-coverts dark brown, slightly tipped with yellowish white; scapulars and upper tail-coverts similarly coloured, but irregularly barred and marked on the basal portion with yellowish white, the latter being also broadly tipped with rufous; quills dull brown with a greyish tinge, barred with dark brown, the secondaries tipped with dirty white; tail greyish brown, tipped with dirty white, and crossed by four broad dark brown bars; underparts white, with a warm buffy tinge, closely marked with elongated drop-shaped stripes of dark brown; cere and legs greenish yellow; bill bluish horn; iris yellow.

Nestling. Covered with pure white down.

Obs. I find that the specimens in the series before me vary considerably *inter se* in coloration. The male

I have described is the darkest and richest-coloured specimen, there being no shade of brown on the upper parts; but I possess also a very old male from Dessau which has the upper parts clear light blue-grey or slaty blue, as clear in shade as in any Peregrine, and the underparts are white, marked with faint narrow greyish bars, the throat being white with only very faint shaft-markings to the feathers. The females are, as a rule, rather browner in the coloration of the upper parts, and are, if any thing, more broadly barred on the under surface of the body. The young also differ greatly in shade, some being very dark, and others very light, some with the underparts white with only small markings, and others with underparts pale rufous with large and bold markings. I cannot refer *Falco longipes*, Nilsson, to any thing but a dark young bird of the present species, as the measurements agree, and the description and figure fit tolerably closely with a young female in my collection from Archangel. Besides, there is no other large short-winged Hawk found in Lapland (whence Nilsson's *F. longipes* came), except the Goshawk.

The Goshawk inhabits Europe generally, and Northern and Central Asia, being of rare occurrence in Africa, and only found as a straggler on the plains of India.

It is only met with in Great Britain as a rare straggler; and, referring to the number of occurrences recorded during the last twenty years, Professor Newton says (Yarr. Brit. B. i. p. 84) that two were obtained in Kent in 1844 and 1846, five have been captured in Suffolk, eleven in Norfolk, one in Nottinghamshire in 1848, and seven in Northumberland and the adjacent counties. Mr. Robert Gray says (B. of W. of Scotl. p. 36) that "as a Scottish species the Goshawk is now, in common with other conspicuous birds of prey, very rarely met with. In the western districts it has never, indeed, come under my observation, either alive or recently captured. I am indebted, however, to my obliging correspondent, the Rev. Alex. Stewart, of Ballachulish, for a record of its occurrence in Argyleshire over a period of twenty years. Two were seen by that gentleman thirteen years ago in Glasgow; they were newly stuffed, and had been shot on the Lochbuy estate, in Mull. Another was killed in Glenorchy in 1848, and was in the possession of Dr. Aldcroft, of Oban. A third specimen, a female, was shot in the district of Appin a few years ago, and belonged to the late Captain Sutherland, of Invercoe, Glencoe. Mr. Stewart also states that he saw a living specimen of the Goshawk in August 1866, on board the yacht 'Chloë,' the owner, J. Rattray, Esq., having procured it in Orkney a short time previously." Mr. Gray adds that he has known it to breed in Kirkcudbrightshire within a comparatively recent period, and gives the following instances of its having been obtained within the last fifty years, viz.:—one shot in Forfarshire in 1825, as recorded by Macgillivray; one shot near Tynehead, Mid-Lothian, on the 13th December, 1865, recorded by Dr. Smith; and one shot near Jedburgh on the 12th November, 1869, now in the possession of Lord Minto. Thirty years ago, he says, it was rare in the parish of Golspie, Sutherlandshire; but Mr. St. John, writing in 1847, says that it bred regularly a few years previously in Morayshire, in the Forest of Darnaway, and that it then also bred in the Glenmore, near Grantown, on the Spey. Messrs. Baikie and Heddle state that the species is frequently observed in Orkney, and that some apparently remain there during the whole year. In Shetland, however, it appears to be rare, Dr. Saxby having in his possession the only specimen known to have occurred there; it was shot at Scaw in the winter of 1860.

In Ireland it is much rarer than in England. Thompson could not give any authentic

instance of its occurrence; but Professor Newton remarks that "Mr. Walters records the occurrence of a male in the county Longford in 1846, and lately one was observed in county Wicklow by Mr. A. Basil Brooke."

It does not occur in Greenland, Iceland, or the Færoes; but it is one of the commonest species in Scandinavia. Collett says that it breeds throughout Norway, but within the Arctic circle it becomes rarer, though, according to Nordvi, it is a resident here and there in East Finmark. Although common all along the coast, yet it prefers the wooded portions of the interior, and occasionally penetrates in the fells above the conifer region. In Sweden, Professor Sundevall says, it is generally distributed and tolerably common as far north as there is high forest; thus in Finmark proper it is either wanting or very rare above 70° N. lat. It is partly resident and partly migratory; for the young birds leave at the approach of winter, whereas the old birds remain throughout the year, even in Lapland. I met with it in several parts of Finland; and Von Wright says that in Finland it is very generally distributed throughout the country at all seasons of the year. In Russia, Mr. Sabanäeff informs me, it is common and generally distributed; and he adds that a large race breeds in the Jaroslaf Government, and only occurs near Moscow on passage; but I have received many specimens from near Archangel, all of which closely agree with Swedish and German examples. Sabanäeff also met with it throughout the Perm Government in the Ural. Throughout the Baltic Provinces and in Germany this bird is extremely common in suitable localities; and Mr. Benzon writes to me that in Denmark it "breeds throughout the country, not only in the larger forests, but also in the parks. In Jutland, especially in Vendsyssel, it is comparatively rare, but is only here and there to be met with breeding on the islands. This spring (1875) a pair built in the 'Sändermarken,' a park attached to the Castle of Fredriksberg, one of the most frequented promenades near Copenhagen; and from there the bird paid a visit to the Zoological Gardens and took a Duck; but after being fired at, it did not think fit to repeat the visit." It is not very common in Belgium and Luxemburg; but a few breed in the wooded districts; and Mr. Labouchere informs me that it breeds in the southern provinces of Holland. In France, Messrs. Degland and Gerbe say, it is tolerably common, and breeds in most suitable localities, as, for instance, in the Dauphiné, the Hautes Pyrénées, the Basses Alpes, Anjou, Champagne, and Lorraine. It appears to be rare in Portugal; and Dr. E. Rey says (J. f. O. 1872, p. 42) that he only once saw it in Estremadura; and in Spain, Mr. Saunders writes (Ibis, 1871, p. 64), it is "rare in Andalucia; but in the pure forests of Segura it is not uncommon." Colonel Irby, who says that it is well known in the wooded districts of Andalucia, considers it somewhat rare, and only once took its nest, on the 15th May, 1871, in the Soto Gordo; and Lord Lilford, who met with it once or twice in Andalucia and Catalonia, took a nest in the Coto Doñana.

It is found in Savoy; but those which remain to breed are few in number, compared with those which pass and repass during the seasons of migration. In Italy it is, according to Salvadori, on the whole rare, but it has been obtained in every province: in Sicily it is local, being unknown near Palermo; but it is stated to breed in the wooded portions of the interior and near Messina, and it is said to be tolerably common in Sardinia. It is generally distributed in Southern Germany, and, according to Dr. A. Fritsch, breeds numerously in Bohemia, but is scarcely as common as the Peregrine. It also breeds in Bosnia; but, according to Dr. Krüper,

it only occurs during passage and in winter, though Lindermayer states that it certainly breeds in the northern provinces. Erhardt found it in the Cyclades in winter; and Lord Lilford writes (Ibis, 1860, p. 8) as follows:—"I observed it twice only in Epirus:—the first time near Kinouria, where it stooped at a Woodcock which I had wounded; this was on the 29th of December, 1857; and again at Butrinto, on the 2nd of January, 1858. Both these were immature specimens. I saw a fine pair of Goshawks stuffed at Santa Maura in March 1857, which had been killed in that island not many weeks before. I am told that this species is common, and breeds in Albania proper, Montenegro, and Bosnia, in which last province it is trained for taking Hares." In Bulgaria, Mr. Farman says, it is rare, and he seldom saw it; but in Turkey it is stated by Messrs. Elwes and Buckley not to be rare in any part of the country, and breeds in the forest of Belgrade. In Southern Russia it is stated by Professor von Nordmann to be generally distributed, especially along the partially timbered banks of the Dnieper, the Bug, and the Dniester, whence it makes excursions to the steppes. According to the various Russian authors a very pale variety exists in Southern and Eastern Russian, of which I have been unable to obtain an example for comparison with the ordinary form. Dr. Krüper met with it breeding in Asia Minor, near Smyrna; but in Palestine, Canon Tristram writes (Ibis, 1865, p. 259), it scarcely occurs south of the wooded district of Lebanon. He never met with it there, but was shown a skin of one purchased in the flesh in the Beyrout market. It appears to be very rare in Egypt, where none of the later collectors obtained it, excepting Captain Shelley, who shot a female at Benisooéf in March 1868. In North-west Africa it is also somewhat rare. Loche states that it is of accidental occurrence in Algeria, always in immature plumage. Mr. C. F. Tyrwhitt-Drake (Ibis, 1869, p. 153) saw a specimen shot in the mountains near Tetuan in December, and in the month of May he saw a pair near Cape Spartel; and, according to Colonel Irby, Favier states that it is resident near Tangier, and is frequently seen during passage, but rarely met with in winter.

To the eastward it is met with as far as China. Mr. Blanford states that he did not obtain a specimen, but that it must be far from rare in parts of Persia; and Major St. John writes, "The Goshawk is more frequently kept for sporting-purposes in Persia than any of the true Falcons, and fetches a higher price. Fifty tomans (20*l.*) are occasionally given for a well-trained female. Many birds are caught in the wooded hills of the south and west; but the majority are brought from the forests of the Caspian. Specimens of the white variety, mentioned by Pallas as occurring in Siberia, occasionally find their way from Astrakhan to the Shah's mews at Tehrán. Persian falconers do not suppose this white bird to be any thing more than an accidental variety. A man whom I met in a steamer on the Caspian in charge of some Hawks assured me that he had seen a white bird taken out of the nest with two of the ordinary colour. The Tarlán is generally flown at the common Red-legged Partridge (*Caccabis chukar*), and in the south at Francolin."

In India, Dr. Jerdon states (B. of India, i. p. 45), it is found in the Himalayas, and probably also in the Neilgherries. He further says (Ibis, 1871, p. 243) that a few visit the plains of the Punjáb during winter. He saw a pair, evidently breeding, in a wood in the Asrang valley, beyond Chini, in the Sutlej, at an elevation of about 12,000 feet. Mr. Hume says that it breeds in India, but, so far as he could ascertain, only in the higher regions of the Himalayas, in the

immediate neighbourhood of the snows. Severtzoff states that it is resident in the south-eastern, north-eastern, and north-western portions of Turkestan, being met with to an elevation of about 6000 feet, but is nowhere common; and it is recorded from Siberia by the various travellers who have collected there. Middendorff only observed it in the Barabá steppe late in the year, and on the south coast of the Sea of Ochotsk in August. A specimen shot on the 17th February at Udskoj, does not, he adds, differ in the least from West-European examples. Dr. Radde only obtained immature examples, and he says that it was very numerous in the Bureja Mountains in October. Von Schrenck brought two examples from the Amoor, one precisely similar to European specimens, and the other belonging to the pale race or variety which occurs in the east. Père David speaks of it as being common in the mountains of Mongolia, and says that the Chinese use it in taking hares. Mr. Swinhoe received an adult male from Pekin, and obtained a bird of the year at Chefoo.

Of all our European birds of prey the Goshawk is certainly one of the boldest and most destructive marauders, and is therefore a terror to all the domestic poultry in the vicinity of the locality it inhabits. It does not strike large game; but Pigeons, small mammals, and especially Partridges are most frequently destroyed by it. It affects wooded districts, and is seldom seen far from the woods; but where Partridges are to be met with in the vicinity of groves or forest, a Goshawk is almost sure to put in an appearance if it inhabits that part of the country, and will claim and take possession of a very large share of the game. On the wing the Goshawk, though swift, is not so rapid as the Peregrine; but in a wooded country, and especially in the forest, it is extremely agile, and will thread its way amongst the close-standing trees when at full speed in a manner that one would scarcely think possible; hence, in the forest, a Pigeon stands but a poor chance of escape.

I have often, when in Germany, heard sad complaints of its rapacity from the peasant women, who say that they cannot keep poultry near where the Goshawk is found; for when once one of these arrant robbers has found his way to the poultry-yard he returns again and again, and is keen and wary enough to carry off chicken after chicken with impunity; and should tame pigeons be kept, he soon thins the cote to such an extent that the owner seldom has any pigeons left for his own use. Speaking of its habits as observed by himself in Germany, Mr. Sachse writes to me as follows:—"This terror of all birds not too large to withstand his attacks, as well as of mammals up to the size of a hare, is held equally in detestation by both the game-preserver and the peasant; for it is equally destructive to the smaller game birds and to all tame poultry. It is, so far as my experience goes, not a frequenter of mountainous districts, and is more often seen in the level country than in the forests in the mountains. Hereabouts (in Rhenish Prussia) it is, thank God, not common in the summer season; for I seldom find its nest, though I always look closely for it; but in the winter season it is tolerably numerous, and is exceedingly destructive. It certainly possesses all the bad qualities of a true robber; for it is cruel, wary, treacherous, bloodthirsty, and insatiable to a high degree. The poor Partridges which frequent the vicinity of the springs where, during the coldest winter, some verdure still remains, in order to seek a hard-earned subsistence, if discovered by a Goshawk, soon become exterminated; and where he has once captured a chicken in a farm-yard he will return until almost all are destroyed; for, cruel as he is by nature, and made bold by hunger, he neither fears the sportsman's gun nor

the peasant's stick, and will dash down on his prey though close to any person, and is quite regardless of being shouted at. If caught and caged together with its young, it will, when impelled by only moderate hunger, kill and devour these latter. When an Eagle Owl is tethered out to attract birds he will attack it with such ferocity that it is not unfrequently possible to catch him alive. It hunts over a considerable district, and will range a full German mile round the place where its nest is, usually hunting quietly amongst the trees and bushes." To this I may add that I have known several instances of a Goshawk following a sportsman, when the latter is shooting in a wooded country, keeping carefully out of view, and, when opportunity offers, pouncing on and carrying off a wounded bird. Mr. Lloyd, the well-known bear-hunter, records a similar instance as follows:—"On one occasion I had shot a brace of Partridges, right and left. Whilst reloading, something passed close by my ear with the rush of a whirlwind; and on looking up I saw a Goshawk in the very act of pouncing on one of my birds that was lying dead within less than thirty paces of where I stood, and which, to my no small mortification, it bore triumphantly away in its talons. Similar instances of the daring of the Goshawk are not at all uncommon. At times, indeed, it will 'stoop' to a hare under the very nose of the gunner, of which more than one example is on record."

Mr. Robert Collett informs me that "in years when the lemming (*Myodes lemmus*) is numerous in Norway the Goshawk destroys large numbers of these animals; but it makes the greatest havoc amongst the game birds; and as it usually inhabits the edges of the forest, it preys both on the old and young of the Blackgame, Hazel-Grouse, and Wood-Pigeons, as well as on Partridges. It is well known that the northern limit of the breeding-range of the Partridge is near the Trondhjemsfiord, in Norway; and it is curious that in some seasons they are numerous, whereas in others they are almost wanting: it is my opinion that this is caused less by the severity of the winter than by Goshawks; for in a locality where there are a tolerable number of Partridges, a single Goshawk will kill one after the other during the winter until it exterminates them. It also frequents our towns. One summer a Goshawk took up his quarters during the day-time on the top of the highest spire in the town, and from this elevated perch it made regular raids on the Pigeons with impunity."

In the ages when falconry was the favourite sport with our gentry, the Goshawk was not so much thought of as the true Falcons, and Sir John Sebright goes so far as to say that he never could understand how any one could use these birds for sport; but in the East the Goshawk is greatly esteemed, and Colonel Delme Radcliffe, a high authority on falconry, says that "the Goshawk is not to be despised when they get into real good working order and are kept in very high condition; they are very swift, and will follow a bird and kill at a much greater distance than would be imagined by those who have only seen them flown at hares, rabbits, and Pheasants in England." Some interesting notes respecting the Goshawk are given by Mr. Thompson (Rough Notes, pp. 114–116), which I transcribe as follows:—

"Several are caught on the high peaks of Josheemat, Tomynaut, Tuppobund, &c. during October and November, when it would appear that the birds leave their snow-girt valleys and betake themselves to others lower down and free from snow. The traps consist of vertical nets six feet high, of stout thread, enclosing three sides of a square, and open at top. In the centre a Pigeon is tied to the end of a small stick, which, again, is fastened by the other end to a peg in

the ground. Two other pegs, one on each side of this first peg, are driven in; and from these fine strings are carried to the point of the stick to which the Pigeon is fastened. These strings assist in keeping the stick in its place when the man pulls another string, by which the stick is alternately raised and then suddenly allowed to fall, thereby giving that fluttering motion to the Pigeon's wings which best serves to attract the Hawk. The trapper hides under some bushes, and, as his trap is usually set on the very summit of the ridge or peak, can keep a good look-out for any bird approaching. When he sees one, he begins to pull at his Pigeon, and watches with keen anxiety every movement of the Goshawk. The latter, as a rule, the instant he sees the Pigeon, dashes at it either from one of the enclosed sides, or through the open one, and striking against the net is enveloped in it. The nets, I should note, are supported on four slender posts firmly driven into the ground, one at each corner of the square; and to these the nets are loosely hung by fine threads, or hairs from a cow's tail.

"The price of a young female varies from R. 40 to 60. Birds in first, second, and third plumage are valued at considerably less, not even a fourth of what a young bird will fetch. The males are of proportionately less value. Nearly all of the birds caught in British and foreign Gurhwal are taken to the Punjab, a few only finding their way down to the Rohilcund.

"Despite of all that is said about short-wing Hawks, this bird is capable of attaining a high degree of efficiency as a bold and rapid flyer, an indefatigable worker, and affording decidedly the best sport that can be had in a forest country. When first put to the quarry, they fly with outspread wings, with a listless, slow motion, like that of a great Owl, admirably described in Sir John Sebright's little pamphlet on hawking; but by every-day practice, and constant flying at the black Partridge, high feeding, and carefully training it to become familiar with men, dogs, and all other objects likely to frighten it, it becomes in about two or three months perfect at its work. The docility of the bird in the hands of a good trainer is wonderful. Its intelligence is almost equal to that of the dogs. I have had them (and it must be said that the natives of India are the only people who seem to understand rightly the training of this bird) so docile and intelligent that by the mere putting out of my hand the birds have flown from the falconer's fists and settled on mine whilst seated on an elephant, and this because I was in the habit of receiving the birds on my fists to fly at black Partridges. Other birds have shown equal intelligence; one I lately had used to be unleashed at my tent door, would fly to the nearest tree, and, as the party set out through forest and glade, would fly from tree to tree, and thus keep on, quite up to the beaters and dogs, never lagging behind till a bird was flushed, but always sufficiently forward to receive the quarry as it rose. This was the best bird I ever had at taking black Partridges, which it always caught on the wing.

"It was a beautiful sight to see Sultana shoot out of a tree like a cannon-shot, at a Partridge just flushed, often striking it before it knew where it was. Sometimes, however, there would be a race—Partridge ahead, Sultana immediately behind, each straining every nerve. The Partridge must go on; it dare not settle in the grass; for to do this it must slacken its pace, each moment bringing the Hawk closer to it, till at last it is clutched. This, over a fine spread of grass, without much interruption to the view, is a splendid sight. Another fine flight often to be witnessed with these birds is the taking the Francolin in tall heavy grass. A line of elephants are beating up the game. The flushed Partridge, rising out of the grass, towers straight up; the

Hawk is slipped, and follows horizontally the direction of the other, until it sees it descending, when, springing up almost perpendicularly, the Hawk seizes the quarry.

"The Goshawks I have had, after a preliminary education of Partridge-hunting, have generally been put at Jungle-fowl, Kalleege Pheasant, Hares, and Peacocks, at all of which they have done well; I have taken a dozen Jungle Fowl in a couple of hours with them, using dogs to flush the birds. They have also killed Peacocks in a single flight, and Hares without ever having been booted. I have also taken Teal and Ducks in woody swamps, by appearing at the water from a point whence a distant view could be had of the water-fowl. The Hawk, on being shown the Ducks, would fly at once to the tree nearest to them, and there wait in ambush. The beaters were then sent to flush the fowl, one of which the Hawk caught in the air as they rose, almost perpendicularly, out of the water."

The Goshawk nests late in April or early in May, either repairing its old nest or adapting an old one of some other bird of prey, or else building a new nest. Mr. Wolley examined a nest in Norwegian Lapland, which was built on a large Scotch fir, and which was so high that when he stood on the branch on which its lower part rested, the top was some inches above his head. The nest is usually placed not far from the edge of the forest, and, so far as my own experience goes, is more frequently placed in a non-evergreen than a conifer tree. It is constructed of small boughs and coarse twigs, and is lined with finer twigs. The eggs, three or four, seldom five, in number, are white, with a faint blue-green tinge; and the surface of the shell is rather rough. In a tolerably large series in my collection several eggs are very slightly tinged with colour, which is certainly not owing to a nest-stain, but is true colour; for I tried to remove it with water, in order to test it. In size the eggs in my collection average $2\frac{16}{40}$ by $1\frac{32}{40}$ inch.

Referring to its breeding-habits in Denmark, Mr. A. Benzon, in a letter just to hand, gives me the following information:—"As a rule, the nest is not placed so high as that of the Kite, and is generally placed in the fork of a branch. It is constructed of branches and coarse twigs, the inside being composed of fine twigs. It is not flat, like the nest of the Kite and the Buzzard, but both broad and deep, and may be distinguished at a considerable distance by the shape. The outside diameter is 1·15 metre, and the height from 0·92 to 1 metre; and the cup of the nest measures 0·38 in inside diameter, and 0·16 metre in depth. Like most other birds of prey, it uses the same nest year after year, and shows attachment to the place it has selected for nidification. Usually one brood only is raised in the year; but Mr. Fischer has in one instance observed that a pair bred twice in the same season, the first clutch of four eggs being deposited on the 23rd April, and the second clutch, consisting only of two eggs, on the 25th May, 1859. The eggs are generally laid in April or early in May; and the earliest-taken egg in my collection is one laid on the 16th April, the latest being one obtained on the 8th May: but it breeds later than this; for, as above stated, Mr. Fischer took eggs on the 25th May. The normal number of eggs is four; but young and very old females lay only two or three." Mr. Carl Sachse informs me that he took out of a Goshawk's nest three eggs on the 24th April and two on the 29th April, and on the 6th of June he found that the female had taken possession of an old Buzzard's nest, not six hundred yards distant from its old nest, had repaired it, and had laid and hatched one egg, the young bird being about two days old. He also says that in the part

of Germany where he resides the Goshawk breeds about the same time as the Buzzard, either repairing and using its old nest or building a fresh one. The nest is placed on a main fork of the tree, usually an oak or beech; and most frequently three or four, but occasionally five eggs are deposited late in April. On the 21st April this year (1875) he took three fresh eggs, one of which was marked with reddish brown spots and pale clay-coloured blotches, the second was slightly blotched with clay-yellow, and the third was bluish white unmarked. On the 29th April he found that the bird had taken possession of a Buzzard's nest, about eight hundred yards from its old nest; and on sending up Bergisch, his climber (an excellent birds-nester, as I can testify; for he accompanied me when I collected there in 1874), he found that it had deposited two eggs, which were taken. The bird sat very close, and did not leave until Bergisch had mounted some distance, the tree being a very high beech. One of these two eggs was marked with clay-yellow, and the other was plain bluish white. Mr. Sachse further informs me that near Magdeburg he frequently found its nest, and that it is numerous in East Prussia and Silesia.

Like many of the larger birds of prey the Goshawk sometimes breeds before it has attained the adult dress; and Mr. Fischer remarks that should a nest be found, and the old female shot, her place is usually taken by a young female the next season. I have also heard of similar instances of Goshawks breeding in the brown dress, and have been assured that these young females lay rather smaller eggs than the old ones. Referring to the size of eggs in his collection, Mr. Benzon informs me that eggs from Denmark are, as a rule, larger than those from Germany and Austria.

The specimens figured are an old female and a young male, both from Wermland, in Sweden, and are those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Wermland, Sweden, May 10th, 1869 (shot off nest). *b*, *c*, ♂ *juv.* Wermland, 1869. *c*, ♀ *ad.* Archangel, December 6th, 1873 (*Piottuch*). *d*, ♂ *ad.* Glennik, Archangel, November 27th, 1873 (*Piottuch*). *e*, ♀ *juv.* Archangel, October 1873 (*Piottuch*). *f*, ♀ *juv.* Christiania, Norway, August 30th, 1872 (*R. Collett*). *g*, ♂. Central Russia (*Dode*). *h*, ♂, *i*, ♀. Near Stettin (*H. E. D.*). *k*, ♂. Dessau, March 19th, 1872 (*Schlüter*). *l*, *pull.* Galicia, 1872 (*Baron A. von Hügel*). *m*, ♂. Spain (*H. L. Irby*).

E Mus. Lord Lilford.

a, ♀. Shot from nest, Coto de Doñana, Spain, May 3rd, 1872 (*L.*).

Genus ACCIPITER.

Accipiter, Brisson, Orn. i. p. 310 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 130 (1766).
Nisus apud Cuvier, Leç. Anat. Comp. i. tabl. 2 (1800).
Dædalion apud Savigny, Syst. Ois. de l'Egypte, &c., p. 34 (1810).
Ierax apud Leach, Syst. Cat. Mamm. & B. Brit. Mus. p. 10 (1816).
Sparvius apud Vieillot, Nouv. Dict. x. p. 319 (1817).
Buteo apud Fleming, Hist. Brit. B. p. 55 (1828).
Astur apud Keyserling & Blasius, Wirbelth. Eur. p. xxxi (1840).
Micronisus apud Newton, Ibis, 1865, p. 342.

This genus is very generally distributed throughout the globe, excepting, according to Mr. Sharpe, in Oceania, the west of Australia, and New Guinea. In the Western Palæarctic Region only two species occur, one of which (*Accipiter brevipes*) Mr. Sharpe excludes from the present genus and places in the genus *Astur*.

In habits the Sparrow-Hawks resemble the Goshawks, but are slighter and more slender in form, and, if any thing, more active than those. They frequent both woodlands and the open country where there are bushes scattered about, and will often visit farm-yards and gardens. They are daring and fierce to a degree, and will strike birds as large as, or even larger than themselves; but they usually prey on small birds, such as Larks, Sparrows, Thrushes, &c.; and they are very destructive to game, for they will seize Partridges and young Pheasants.

They breed in trees, either building their own nests of sticks, and lining them with moss, &c., or else they take possession of the deserted nest of a Crow or some other large bird. Their eggs, varying from four to six or even seven in number, are bluish white very richly blotched with red or reddish brown.

Accipiter nisus, the type of the genus, has the bill short, decurved from the base, the cutting-margin of the upper mandible festooned; nostrils oval; wings short, reaching a little beyond the middle of the tail, the first quill shorter than the secondaries, the second shorter than the sixth, the fifth longest; tail long, even; legs long, slender, the tarsus non-scutellate; toes long and slender, the middle toe much longer than the others, and the inner toe shorter than the outer one; claws long, curved, acute, that on the inner toe much larger than the claw of the outer toe, hind claw strong.



SPARROW - HAWK.

♀. ♂. (Ireland)

♂. sen. (England)



SPARROW - HAWK.

1. 2. ♂ ad. et jun. (Palestine) 1/2. 3 ♂ juv. (Turkey)



SPARROW-HAWK.

♀ (Scotland) ♀ (Switzerland)

SPARROW - HAWK.
ACCIPITER NISUS.

ACCIPITER NISUS.

(SPARROW-HAWK.)

Falco nisus, Linn. Syst. Nat. i. p. 130 (1766).
Dædalion fringillarius, Savigny, Descr. de l'Egypte, Ois. p. 270 (1808).
Ierax fringillarius, Leach, Syst. Cat. Mamm. &c. Brit. Mus. p. 10 (1816).
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Sparrow-Hawk, English; *Speir-sheog*, Gaelic (*R. Gray*); *L'Épervier*, *Tiercelet*, French; *Sparviere*, Italian; *Spriveri*, *Spraveri*, Sicilian (*Doderlein*); *Gavilan*, *Milano jaspeado*, Spanish (*L. H. Irby*); *Esparver*, Valencian (*H. Saunders*); *Gavião*, Portuguese; *Falkett*, Maltese (*C. A. Wright*); *Sperber*, *Finkenhabicht*, German; *de Sperwer*, Dutch; *Sparfhök* Swedish; *Spurvehæg*, *Finkehæg*, Danish and Norwegian; *Varpuishaukka*, Finnish; *Krogulec*, Polish; *Perpelatnik*, Russian.

Figuræ notabiles.

Buff. Pl. Enl. 412, 467; Naum. Vög. Deutschl. i. Taf. 19, 20; Yarr. Brit. B. i. p. 62; Gould, B. of E. i. pl. 18; Kjærb. Orn. Dan. Taf. iv. figs. 4, 5; Schl. Vog. Nederl. pls. 13, 14, et Tr. de Fauc. pl. x.; Salv. & Brodr. Falconry, pls. xx. & xxi.; Fritsch, Vög. Eur. tab. 4. fig. 5; Brodrick, Falc. Fav. pls. ii. & iii.; Gould, B. of Gt. Br. pt. v.; Bettoni, Ucc. Lomb. Tav. 58; Sundev. Svensk. Fogl. pl. xxvii. fig. 1.

♂ *ad.* suprà cinereus, plumarum nuchalium basi albâ: scapularibus et tectricibus alarum dorso concoloribus, vix saturatioribus, harum minimis obsoletè albo marginatis: remigibus brunneis, scapis pallidiùs brunneis, secundariis cinereis dorso concoloribus: alâ inferiore sericeo-albâ, pennis versus apicem cinerascenti-brunneis, fasciis regularibus brunneis transnotatis: caudâ suprà cinerascenti-brunneâ, fasciis saturatiùs brunneis conspicuè transnotatâ, ad apicem angustè albido terminatâ: fronte, loris et supercilio indistincto albidis: regione auriculari saturatè cinereâ: genis, cum gutture toto et colli lateribus, albidis, angustissimè brunneo medialiter striatis, his paullò rufescentibus: corpore reliquo subtùs albido, ubique fasciis rufescentibus et brunneis transnotato, pectoris plumis medialiter brunneo angustè striatis: corporis lateribus et hypochondriis rufescente maximè tinctis, cruribus etiam magis rufes-

centibus et brunneo magis conspicuè transfasciatis: subcaudalibus longissimis albis: subalaribus albidis brunneo transversim notatis: cerâ et pedibus flavis, unguibus nigris: rostro corneo, mandibulâ ad basin flavicante: iride aurantiacâ.

♂ *sen.* schistaceo-cinerascens, subtùs ubique rufescens, fasciis brunneis indistinctioribus transnotatus: hypochondriis et abdomine imo latiùs albo transfasciatis: iride ferrugineâ.

♂ *juv.* suprà brunneus, pileo saturatiore, nuchâ rufescente, hujus plumarum basibus conspicuè albis: notæi plumis omnibus distinctè rufo marginatis: supercilio, loris genisque rufescenti-albis: primariis brunneis, scapis rufescenti-brunneis, pennis nigricante transfaciatis, secundariis ad basin rufo, versus apicem albido marginatis: alâ subtùs rufescente, fasciis angustis brunneis transnotatâ: caudâ fusco-brunneâ, fasciis quinque nigricantibus transnotatâ: subtus rufescenti-albus, gulâ nigricante striolatâ: pectoris plumis maculis cordiformibus rufescentibus notatis, et brunneo transfasciatis: abdominis plumis albidioribus, lineis brunneis ante apicem fulvidum transfasciatis: subcaudalibus crissalibus albis, brunneo medialiter angustè lineatis, longioribus puriùs albis vix rufescente tinctis: cruribus rufescentibus, brunneo translineatis: subalaribus fulvescenti-albis, brunneo transversim variis: iride flavâ.

♀ *ad.* mari similis, sed conspicuè major: suprà cinerascens, pileo saturatiore, nuchâ paullò albicante: loris et supercilio postoculari, distinctiore, albidis: genis rufescenti-albis, latè brunneo striatis: gulâ albâ, sparsim brunneo longitudinaliter striatâ: subtùs albescens, brunneo ubique transfasciata, abdomine imo sparsiùs, et subcaudalibus purè albis.

♀ *sen.* suprà cinerea: subtùs albescens, ubique cinereo transfasciata, hypochondriis et cruribus distinctè rufescentibus: gutture cinereo striolato.

juv. mari juveni similis, sed major: suprà saturatè brunnea, nuchâ rufescente, plumis omnibus rufo marginatis: subtùs rufescenti-alba, brunneo transfasciata, pectore maculis rufescentibus cordiformibus notato, gutture brunneo distinctè longitudinaliter striato.

Young Birds.

Nestling. Covered with white down, slightly tinged with buff on the scapular region and centre of the belly; on the sides of the face the down is thinner; the flanks, sides of the neck, and region round the eye are almost bare.

Obs. The striking difference in size which exists between the two sexes of the Sparrow-Hawk is observable in the young birds before they leave the nest, and is especially noticeable in the stouter and longer leg of the female. Mr. J. H. Gurney, jun., has lent us several specimens in various stages of downy dress, from which we are able to note the following facts:—The first feathers which protrude from the white down are the quills and tail-feathers. The primaries, as they shoot from their horn-blue envelope, are sepia-brown, with an almost imperceptible edging of pale rusty, and the upper wing-coverts are coloured in like manner; the secondaries, however, as well as the tail-feathers, have a conspicuous rusty edging, even at this early age. On separating the down the tiny blood-feathers may be seen sprouting on the back, of a sepia-brown colour, with a rust-coloured tip to each plume; the sides of the face are almost bare, with only a sprinkling of tiny white down. As the bird grows older, the down is shed, and the feathers everywhere appear. The general colour of the plumes is dark sepia-brown with rufous edgings to the feathers, these being most conspicuous on the scapulars and wing-coverts; the quills are dark brown with rufous shafts, the primaries with little or no indication of a paler edging, the secondaries tipped with rufous. A rufous blush pervades the under surface of the wing, all the feathers as far as they are developed exhibiting two sepia-brown bars, and a broad band of the same colour at the extremity of the feather; between these bars is a large interspace of silvery white, shaded with rufous. The breast-

feathers, as far as can be seen, on their emergence from the down are whitish with a pale rufous shade, crossed by narrow bars of dark brown, before which the rufous colour slightly increases in intensity, the interspaces being very broad and whitish in colour. The tail is sepia-brown, with a broad blackish bar across it, the tip of the feathers being rather more greyish brown, with a conspicuous apical line of pale rufous, which colour likewise pervades the under surface of the tail; the upper tail-coverts are edged with fiery tawny. The bases of the scapulars are white, and show conspicuously. A young bird in Canon Tristram's collection differs in being a little more greyish, and in having the bars on the abdomen more plainly developed. It was taken, however, from the same nest as Mr. Gurney's specimens, and may, therefore, only be a day or two older than the ones first noticed by us.

The plumage of the two sexes as they proceed towards maturity now differs considerably, so that we think it better to give a description of the males and females separately, commencing with the former, as follows:—

MALE.

Very young Male. Above dark sepia-brown, with dull rusty edgings to all the feathers, these markings being more obscure on the head, which is rather deeper in colour than the rest of the body; the hinder part of the neck is distinctly rufescent; on the scapulars and here and there on the wing-coverts the white bases to the feathers show through; the inner web of the secondaries is deeply tinted with rusty, so that the under face of the wing is more or less rufous all over; the under surface of the body is rufous, the throat and chest inclining to white, and streaked longitudinally down the centre of each feather with brown; the upper part of the breast transversely crossed with brown, which, however, is not in regular bars, but takes the form of a triangular heart-shaped patch; on the lower part of the breast the cross bars are dark brown in colour, rather irregular, and V-shaped; the belly and under tail-coverts, as also the thighs, are uniform pale tawny with faint spots and cross markings of brown; the under wing-coverts are similarly marked, but are a little darker rufous. Total length 9·5 inches, culmen 0·65, wing 6·1, tail 4·5, tarsus 2·05.

The specimen above described is a little male bird belonging to Mr. J. H. Gurney, jun., who informs us that it died in his possession on the 17th of July 1867. It is quite young, the tail being not fully grown, the primaries just shooting, and it has a lump of down remaining on the head, centre of the chest, and base of the primaries on the inner face of the wing, while tufts of down still adhere to the feathers of the flanks, thighs, upper wing-coverts, and lower back and rump. We have described it thus fully, inasmuch as we wish to draw attention to the rufous coloration of the under surface. This reddish tint only gradually disappears. The description of the fully grown young bird of the year is herewith appended, the example described being a male shot near Cookham, in Berkshire, on the 10th of November 1870, by Mr. Joseph Ford:—

Young Male. General colour above brown, all the feathers conspicuously edged with rufous, these markings being less distinct on the crown; the nape much varied with white, and at the same time strongly tinged with rufous; the lores and a distinct eyebrow carried backwards over the ear-coverts mottled with brown and rufous like the back of the neck; cheeks and sides of the neck also mottled with brown and rufous, the former mesially streaked with a hair-like central stripe of dark brown; wing-coverts brown like the back, and edged with rufous exactly in the same manner; quills dark sepia-brown, with pale rufous edges to the inner primaries and secondaries, irregular, and looking like the remains of a band; the shafts of all the quills brown; the inner face of the wing glossy white, the secondaries, however, inclining to pale rufous, the whole wing crossed with blackish bars, and the tips of the feathers shading off into the same colour; these dark bars are almost undistinguishable on the upper aspect of the wing; the number of distinct dark bars on the long primaries is five, not including the one at the extremity of the quill; tail likewise sepia-brown, but rather paler than the wings, the

shafts brown, but here and there inclining to yellowish, the feathers margined at the tips with a narrow edging of whitish; across the tail extend five regular blackish bands, the basal one being hidden by the upper tail-coverts; the brown interspaces much broader than the bands themselves; the under surface of the tail is dusky whitish, with the cross bands very conspicuous, the shafts also being whitish; throat dull white, with narrow mesial streaks of brown; rest of the under surface of the body dirty white, with cross bands of pale tawny and brown, on some feathers the bar being almost entirely of the latter colour; on the chest the tawny bar is widened into a spade-shaped blotch at the end of the feather; the bars on the lower breast and belly are mostly dark brown, and not very broad, the white interspaces being very distinct; the flanks deep tawny with brown cross bars; the vent and under tail-coverts white, with a few indistinct brown cross markings at the base of the feathers; bill horn-colour, the lower mandible yellowish at the base; cere and legs yellow; iris yellow.

Obs. Another young male, killed close to London on the 11th of November, 1869, and now in Lord Walden's collection, differs slightly from the foregoing example. The rufous edgings to the feathers of the head and interscapular region are less distinct (in fact almost obsolete), the under surface of the body is much paler (in fact it may almost be called white), and the throat is more thickly covered with mesial brown streaks, which are at the same time broader and more distinct. The character of the pectoral markings is the same, but they are more pronounced, and show more distinctly, owing to the purer white colour of the under surface; the flanks and thighs are not so rufous, the under tail-coverts are of a purer white, and the cross-barring of the under wing-coverts is much more plainly developed.

Obs. Another young male in Mr. Gurney's collection, procured at Greatham, in Durham, on the 16th of November, 1865, differs conspicuously from both those recently noticed; for the head and back of the neck are so tawny in colour that the mesial brown markings appear like irregular spots or blotches; the rusty edgings to all the feathers of the upper surface of the body are remarkably distinct, especially on the wing-coverts. The rump is very plainly shaded with slaty grey. The most striking character, however, in this specimen seems to us to be the very distinct tawny shade which pervades the whole of the under parts, and is especially clear on the basal part of the tail-feathers, all of which are more or less margined with this colour for more than half their length. The brown cross bars on the under surface of the body become almost obsolete, but are to be traced on the breast-feathers; on the abdomen and flanks they are scarcely distinguishable, and the white interspaces between the tawny bars are very broad. The throat and cheeks are dull white, the linear shaft-stripes very distinct. Total length 11·5 inches, culmen 0·65, wing 7·7, tail 6·0, tarsus 2·15, middle toe 1·3.

Obs. The changes of plumage through which the male Sparrow-Hawk passes in England may be approximately stated as follows. On leaving the nest the plumage is dark sepia-brown above, with edgings of tawny or rusty to all the feathers; the under surface also is rufescent, covered with brown spots and bars, those on the breast being brown, with a central spot of tawny. This plumage seems to be retained throughout the autumn, becoming a little paler below, while the rusty margins to the upper plumage fade slightly. For further remarks on the young birds, reference must be made to our account of the specimens examined.

Adult Male. Above dark ashy grey, with a slight appearance of white on the nape of the neck, where the bases of the feathers show through; scapulars and wing-coverts of the same colour as the back, excepting that the least wing-coverts running along the carpal joint are faintly edged with fulvous; quills deep brown, with pale brown shafts; the secondaries grey, like the back, with irregular white spots on both webs, concealed, however, by the other feathers; the lower surface of the wing silky white, crossed by brown bars of a medium breadth, the long primaries having as many as seven bars,

without including the brown tip, which is seen on all the feathers; tail brown, all the feathers more or less washed with ashy, the two centre feathers partaking especially of this colour, the shafts brown; across the end of each tail-feather runs a broad bar of dark brown, the extreme tips of the feathers being white; the middle tail-feathers crossed with four bands of dark brown, much narrower than the interspaces between, the apical band being the broadest of all; on the outer tail-feathers is seen the appearance of a fifth dark band, which, however, is so near the base as to be hardly observable; lores as well as an indistinct eyebrow whitish, with a slight fulvous tinge; ear-coverts dark grey, like the rest of the head; cheeks and sides of the neck white, with a very strong tinge of rufous, the feathers of the former mesially streaked with dark brown; throat white, slightly tinged with rufous, and having the same dark streaks as on the cheeks; rest of the under surface of the body dull white, crossed with transverse bars of pale rufous, the sides of the breast and flanks being entirely of this colour; most of these rufous bars are more or less tinged with brown, which takes the form of a narrow line running parallel with the bar itself; on the chest are some very distinct indications of mesial stripes; the white interspaces are broader on the lower part of the breast and abdomen; the under tail-coverts white, only the basal portion being irregularly barred with pale narrow rufous markings; the flanks rufous near the base and along the inner side of the leg, the transverse bars being very narrow but very distinct; bill dark horn-blue, the base of the lower mandible yellowish; the cere and feet yellow, the nails black; iris orange. Total length 12 inches, culmen 0·65, wing 7·9, tail 6·5, tarsus 2·15, middle toe without claw 1·3.

Fully adult Male. Differs from the foregoing description, which is that of an ordinary adult male, in the following particulars. The upper surface of the body is entirely deep blackish grey, of a cindery hue; the whole of the under surface is a rich rufous, chin and throat included. On the latter, as well as on the fore part of the chest, are some faint black hair-like streaks running down the centre of the feathers; on the breast are some indistinct mottlings of greyish brown, the remains of the cross bars of the former mature but not fully adult dress; the lower part of the breast and abdomen all alternately barred with rufous and white, the interspaces, of the last-named colour, being very broad; the under tail-coverts are white, excepting the usual dusky cross-barrings at the base of the feathers; the lores, eyebrow, and cheeks are uniform deep rufous; the ear-coverts deep blackish grey like the head, but slightly dashed with rufous: iris rust-colour or carmine.

Female.

Nestling. As before noticed, the hen Sparrow-Hawk may be distinguished at a very early age by its much larger size and by its stouter and thicker leg. In plumage the young female much resembles the male, but is not quite so rufous underneath. The full-grown bird may be described as follows:—

Young Female. Above dull sepia-brown, the head darker, the nape showing the white bases of the feathers, which gives it the appearance of being streaked with white, while a strong rusty tint is also apparent, all the feathers of the upper surface being more or less distinctly margined with this colour; the ear-coverts very dark sepia-brown, as dark as the crown, and only the fore part of the cheeks, as well as the lores and a narrow eyebrow, rufous white striped with brown; the hind part of the cheeks, as well as the sides of the neck, dark sepia-brown, mottled with rufous; wing-coverts coloured like the back with the same margins to the feathers, the greater coverts perhaps being a little lighter-edged; quills dark brown, with umber-brown shafts; the inner face of the primaries silky white, of the secondaries pale tawny, all the feathers barred across with dark greyish brown, the long primaries having six distinguishable bars, not including the end of the quill, which is of the same colour as the cross bars; the outer edge of the primaries and the tips of the secondaries are faintly margined with greyish white, the inner secondaries, however, being tipped with pale tawny; on the scapulars may be seen the white bases

of the feathers, which show conspicuously on the slightest disarrangement of the plumage; the tail sepia-brown, rather paler than the back or wings, the shafts umber-brown; it is crossed by five bars of deep brown, the last one forming a broad band before the apex of the feather, which is pale tawny; the under surface of the tail is pale, inclining to silvery white, with whitish shafts, the bars across showing with great distinctness; under surface of the body pale tawny, deeper on the chest, and shading off gradually into white on the abdomen and under tail-coverts; the throat whitish, with very distinct streaks of brown down the centre of each plume; the fore part of the chest mottled with spade-shaped rufous spots at the end of each feather; the lores, breast, and abdomen distinctly barred with transverse cross-markings, rather broad and very plain; the thighs deep tawny, with dull brown cross-markings; under wing-coverts pale tawny, with irregular cross-barrings of brown.

Obs. The above description is taken from a specimen in Lord Walden's collection, shot near Cookham, in Berkshire, on the 8th of September, 1866, by the late Mr. Briggs. As the bird advances in age, the changes in plumage are very similar to those undergone by the male: the tawny edgings become obsolete, and the rufous shade of the under parts gets gradually paler, the cross-barrings becoming absorbed into rather narrow transverse bars. The narrowness of the bars on the under surface is a test of the age of the bird; for as the latter progresses, so the cross bars become finer, till in the very old female they are reduced on the upper breast to a few irregular triangular markings, being also very narrow and irregular on the lower breast and abdomen; in the fully mature female likewise the flanks have a tuft of bright rufous plumes, and this is always a sure distinction of a very old bird. The persecution to which Sparrow-Hawks are subjected seldom permits of any individual attaining this dress; and we have only seen one British example in Mr. Gurney's collection: of this specimen we add a short description.

Fully adult Female. Above dark slaty grey, deeper on the head, the white bases of the feathers showing on the nape and scapulars; lores hoary white, not very distinctly indicated, produced backwards to the eyebrow, which is likewise not very distinct, white in colour, with the very faintest tinge of tawny, and streaked with brown; ear-coverts dark slaty grey like the crown, but plainly mixed with rufous, the cheeks entirely of the latter colour, longitudinally lined with slaty-grey shaft-stripes; scapulars and wing-coverts coloured like the back, the least wing-coverts edged with very pale tawny on the carpal bend; quills dark greyish brown, with pale brown shafts; the secondaries with a slight whitish edging at the tip; the under surface of the wing dull silvery white, the feathers rather shaded with buff at the base; the long primaries crossed with five distinct bars, not including the one at the tip of the feather, the white interspaces very broad, nearly three times as broad as the bars themselves; lower part of the back and rump rather paler than the rest of the upper surface, the sides of the latter tinged slightly with rufous, the upper tail-coverts also edged faintly with rufous or whitish; tail ashy grey above, paler than the back, the shafts brown, all the feathers more or less distinctly tipped with whitish and crossed by four blackish bands, the lowest being just concealed by the upper tail-coverts, and the last one being separated from the whitish tip of the feather by a distinct, though not very broad, grey interspace; on the under surface of the tail, which is dull hoary white, the bars are very narrow, especially on the outermost feathers; chin whitish, but the rest of the throat distinctly washed with rufous, the shaft-stripes plainly indicated, and on the feathers of the lower throat is a tiny spot of brown; rest of the under surface of the body whitish, the sides of the upper breast being washed with slaty grey and slightly tinged with rufous; the cross-barring on the lower part of the body narrow, and on the upper breast nearly obsolete, being reduced to a triangular mark at the tip of the feather; all the bars on the sides of the body more or less tinged with rufous, and on the flanks is a very large tuft of rufous down, with white tips to the plumes; lower abdomen and under tail-coverts white, with a few obsolete brown cross bars on the former; thighs pale rufous, with irregular narrow transverse markings of brown;

under wing-coverts whitish, with little brown triangular markings; axillary plumes white, with greyish-brown cross bars, the terminal ones slightly tinged with rufous.

We now proceed to give a few remarks on the series of Sparrow-Hawks now before us, according to their localities.

EUROPE.

Norway. We have an adult male from this country, sent to us by our friend Mr. Robert Collett, the only male specimen, we regret to say, that we have examined from Northern Europe; and we have given a full description of it above as being doubtless the same as the Swedish bird, the true *A. nisus* of Linnæus. The bands on the long primaries are seven in number, and on the tail-feathers four. The general colour of this specimen is rather pale, the transverse bars on the under surface being light tawny and rather broad. In counting the number of bands on the quills the apical brown tip is never taken into consideration, as it is always present; the bars which can be seen on the quill itself alone are reckoned. The axillary plumes are white, barred with tawny, most of the bars of the latter colour having a greyish line bordering them.

Germany. We take this country next in order, as likely to possess the exactly typical bird of Sweden. Mr. Collett's Norwegian specimen having arrived too late for figuring, we were obliged to do the best we could, to take an example from some country near to Sweden; and we therefore figured an adult male shot near Stettin by Dresser in 1860. On comparing it with the Norwegian bird described, there is really no striking difference. The German example is a little older, and is rather darker slaty-grey, and more rufous underneath, especially about the sides of the face and upper breast; the greyish-brown lines across the breast-feathers are a little plainer. The bands on the long primaries are six in number; and there are five on the tail-feathers, so that it has one more than the bird from Norway: the number of tail-bands we count on the second feather; that is, the one next to the centre rectrix. The axillary plumes are more narrowly barred, and have less rufous, than in the foregoing specimen. Total length (♂) 11·8 inches, culmen 0·65, wing 8·0, tail 6·2, tarsus 2·8, middle toe without claw 1·3.

Russia. Mr. J. H. Gurney, jun., has lent us a young male out of his collection, procured by him at St. Petersburg on the 6th of September, 1869. It agrees best with Lord Walden's specimen (mentioned in the descriptions) from the neighbourhood of London (November); but it is more rufous, and has the markings a little more pronounced, especially on the axillary plumes; the eyebrow is whiter and broader, and the cheeks more decidedly rufous. Bars on the primaries six, on tail five. Total length (♂) 12·2 inches, culmen 6·5, wing 7·5, tail 6·0, tarsus 2·2, middle toe without claw 1·3.

Denmark. Mr. Alfred Benzon has sent us two specimens, both immature females. The first one we received was shot on the 16th of September, 1870, and is certainly a bird of the year. It differs from our English specimen, killed in September, in the same degree that the British males differ from those of the Continent. It is altogether whiter underneath, and has the drops of brown colour on the chest much clearer; the whitish eyebrow, cheeks and throat, the latter with a few brown median shaft-stripes, are conspicuous differences, easily observable on comparing birds of the same age from the two countries. The bars on the axillary plumes are broader; and these feathers have not the same rufous tint as those of the English bird. Bars on primaries six, on tail five. Total length 14·8 inches, culmen 0·8, wing 9·4, tail 7·5, tarsus 2·5. The other specimen given us by Mr. Benzon was shot on the 13th of September, 1870, and is a very puzzling bird to understand. Looking at the upper surface of the body, she would appear to be quite young; for all the feathers are *very* conspicuously edged with tawny, and the white bases to the feathers show very plainly on the wing-coverts, scapulars, and secondary quills; on the hinder neck a pale tawny shade prevails, all the feathers being irregularly marked with brown patches of colour, producing a curious mottled appearance. Thus far the bird would seem to be a bird of the year; but on examining the under surface of the body the marks are such as appear on a much older female than we should have judged this bird to be; for the barring is very narrow, and scarcely a trace of the central heart-shaped spot on the chest-feathers is to be seen; the throat is thickly streaked with

brown. Bars on primaries six, on tail five. Total length 15 inches, culmen 0·8, wing 9·0, tail 7·2, tarsus, 2·4, middle toe without claw 1·65. When compared with the English examples killed in December, and described by us, the tawny edgings to the upper plumage are much plainer, though we notice a clearer shade of grey on the rump and tail of the Danish bird. In the latter, however, the cross bars of the under surface are very much narrower, and the spots on the breast-feathers are so far modified as to form irregular bars; in the English specimen there are still several very distinct tawny spots. The latter bird has also a much stouter leg and more powerful talons.

Holland. In Mr. Swinhoe's collection is a female killed in December. On comparing it with an English example killed at the same time of year, the bird appears rather more greyish brown above, but is otherwise similar in general character. The most peculiar point about the Dutch specimen is the very deep-brown ear-covert, and the thickly striped cheeks; on the breast the markings are arrow-shaped, with a very distinct tawny apical spot; and these spots are observable in the centre of the cross bars on the belly as well as on those of the axillary plumes; the bars on the latter are broader and not so numerous as in the English bird; the tarsus, again, is not quite so thick, nor the claws so powerful, as in the last-mentioned individual. Total length 14·6 inches, culmen 0·8, wing 9·2, tail 7·4, tarsus 2·4, middle toe without claw 1·55.

British Islands. The impossibility of procuring a complete series of Swedish Sparrow-Hawks prevented us from describing the different changes of plumage through which the typical *A. nisus* passes. We were therefore obliged to take British examples, as we possessed, thanks to the kindness of our friends, a tolerably complete series from these islands. But it is impossible to deny that the adult Sparrow-Hawks of England are darker in plumage than continental specimens; and this darker coloration would appear to extend even to the young birds. We have so fully referred to the differences observed in our English series, that only a few remarks are needed here. The question which has puzzled us considerably has been whether the Sparrow-Hawk has two broods in the year—a question rather difficult to solve in a country like England, where the present species must find it no easy matter to rear one. All the evidence that we have received in answer to inquiries has tended to show that the Sparrow-Hawk only has one brood; and Sir Victor Brooke, who has studied the habits of the bird under favourable auspices, writes to us:—"I am almost sure they never under any circumstances *rear* two broods in the year." Another difficulty we have experienced has been in determining whether the male bird gets into adult plumage in his *first* spring, because we have examples killed in November which are still in young plumage, while a bird killed on the 6th of October has lost a great deal of the rufous edgings to the feathers, and is getting the bars on the breast very much narrowed. On our consulting Mr. Gurney, that gentleman very kindly sent us his experience on the subject; and so important are his remarks that we are sure he will excuse our reproducing them here. "I have never kept Sparrow-Hawks alive through their changes of plumage; but I have examined a great number, and my belief is as follows. The male gets the entire adult dress, including the *orange* eye, in the course of the spring succeeding that in which he is hatched, *i. e.* when he is about twelve or fourteen months old. The female at the same period assumes a plumage very like that of the adult Goshawk, but with a darker tone of lead-colour on the back, and still keeping the immature yellow iris. At a subsequent period, probably when either two or three years old, the back of the female becomes more decidedly tinged with blue, her sides become marked with rusty red, like the breast of the male; sometimes the transverse bars on the breast become slightly edged with rufous in addition to the rufous on the flanks, and the eye becomes orange, as in the male. I think the second change in the female is probably more gradual than her first. Skins of adult Goshawks and Sparrow-Hawks, which have been kept for several years, are often browner on the back than in life, losing much of the bluish tinge, which, I believe, *rubs* off (but perhaps fades). I have no information as to whether the Sparrow-Hawk has a second brood if the first is destroyed; but I think they only breed once when undisturbed, and should doubt their making a second nest if the first is taken after the eggs are hatched or even much incubated: Major Irby records, in an early volume of the 'Zoologist,' an instance of a Sparrow-Hawk, whose nest had been destroyed, mating with a Hobby. Probably the young November birds you mention are the offspring of

parents whose first eggs (or possibly young) have been destroyed in the early spring; but many of them may be migratory specimens, hatched later in northern latitudes than they would be in England." We think that Mr. Gurney is right in stating that the young male gains his adult dress in his first spring; at all events Lord Walden possesses a specimen killed near Reading on the 21st of February, 1868, which would at once be pronounced fully adult; for it is very richly coloured on the breast and is dark blue-grey above; but a few obsolete tawny edgings to the tail-coverts, and a shade of the same colour on the tail itself, show that its adult plumage has not long been put on. The young male described from Cookham, however, and shot there on the 10th of November, is a British-bred specimen, and is very rufous underneath; but the specimen from Greatham, mentioned above as killed on the 16th of the same month, we take to be a migrant, on account of its paler coloration; but it will be impossible to determine until a thoroughly complete series of typical Swedish birds shall have been examined. The adult males we have seen are seven in number, and they clearly show the way in which this sex gets more and more rufous as the bird advances in age. One of them is exceedingly richly coloured on the under surface of the body, which is almost uniform rufous on the chest; the axillary plumes are also thoroughly pervaded with this colour throughout their entire length; the cheeks, forehead, and eyebrow are also uniform rufous, with no admixture of white. In all the specimens the bars on the primaries are six in number, the more aged birds having them more distinct, while in some of the latter the lowest basal bar is almost obsolete; in the above-mentioned Reading example the second and third bars are joined together, and they are very irregular in shape. On the tail the bars are five in number; but in the Reading male before mentioned there is the trace of a sixth, nearly obsolete bar on the base of the tail, situated close to the next bar, and evidently about to be absorbed into that or to disappear altogether. In the rufous-breasted male the basal tail-band is also very faintly developed; and it is probable that in a very little while this bird, had he lived, would have lost all trace of the fifth or basal bar; for it is evident to us that the male Sparrow-Hawk, as it gets aged, gradually diminishes the number of bars on the tail—the greatest number being six, and the least number probably four. Total length (♂) 11·5–12·5 inches, culmen 0·65, wing 7·6–7·95, tail 6·0–6·3, tarsus 2·1–2·15, middle toe without claw 1·25–1·35. The older birds seem to have rather stouter legs than the younger ones.

Now as regards the females. Of these we have a good series of British-killed examples before us, and Mr. Gurney's description of the changes of plumage is well illustrated. There can, we think, be little doubt that the female gains her adult plumage in her first spring; that is to say, all traces of the rufous edgings disappear, and the bars are much narrower on the breast. It remains, however, to compare Swedish examples with English female birds; for our specimens are much darker, in both the young and adult stages of plumage, than those from the Continent. In the collection of Mr. J. H. Gurney, jun., we have examined a specimen which is unlike any other British Sparrow-Hawk we have seen, and looks like a miniature Goshawk. On the feathers of the interscapulary region, on some of the greater coverts are narrow *whitish* edgings. The whole tone of the bird's plumage is pale, especially on the under surface of the body, which is white, with greyish-brown cross bars, rather wide apart; the eyebrow also is very broad and white; but the ear-coverts are strongly rufescent; and there is an appearance of this colour on the flanks, this last character showing an approach to maturity. This bird, which was shot at Lower Earlham, in Norfolk, on the 18th of February, 1866, we believe to be a migratory individual; for it is very different from an English specimen killed on the 20th of April, although both are birds of the previous year. The bars on the primaries are only five in number, whereas in all our other English specimens there are six, the younger ones bearing some trace of an obsolete seventh bar at the base of the quill; the tail-bands are five in number, as in the English birds, though in the very old females from this country the two basal bars are nearly obsolete and bear certain evidence that one, if not two, disappears with age. The measurements of Mr. Gurney's specimen are as follows:—Total length 14·3 inches, culmen 0·8, wing 9·2, tail 7·2, tarsus 2·4, middle toe without claw 1·55. The other English specimens measure:—Total length 14·0–16·0 inches, culmen 0·85, wing 8·8–9·3, tail 7·3–7·6, tarsus 2·4–2·5,

middle toe without claw 1·55–1·6. It is a curious fact that the maximum length in the above measurements is attained by an immature bird procured in East Lothian by Lord Walden, and now in his collection.

One of the most remarkable specimens of a Sparrow-Hawk that we have ever seen was sent to us for examination by the Marquis of Huntly, who shot it in September, 1871, near Aboyne Castle, in Aberdeenshire. From the remains of rufous margins to a few of the feathers of the upper surface, it is evidently not quite mature; yet on the underside of the body it is deep rufous from the chin to the under tail-coverts. We were at first inclined to consider it an extremely old female; until Mr. Gurney, to whom we showed the bird, pointed out the obsolete rufous edgings on some of the feathers; and we now agree with him that the specimen is not fully adult. Mr. J. H. Gurney, jun., has sent us the following note concerning the occasional assumption of the male plumage by the female Sparrow-Hawk:—"My father has known very old females to get a tinge of colour like the male; and Mr. Harting, in the 'Birds of Middlesex,' speaks of specimens whose sex could not be determined by external characters; such a bird my father once saw stuffed in an inn in Sussex. An adult male in the plumage of the female was killed in Hertfordshire (Zool. 1846, p. 1637), being also of the size of a female." We do not consider Lord Huntly's specimen to be an old female in masculine dress, because it is certainly not a very old bird; but we think it probable that it is a sterile female, and on that account is in plumage something like that of the old male. In any case, the bird is sufficiently interesting to merit a description.

Supposed sterile Female. Above sooty brown, darkest on the head; the nape showing the white bases to the feathers, and indistinctly tinged with rufous; an obsolete edging of this latter colour may be seen on many of the interscapular feathers, and a more distinct one on the wing-coverts; quills sooty brown, some of the feathers washed with clearer brown, this colour also appearing on some of the wing-coverts; five bars on the long primaries, and remains of a sixth obsolete one at the base; lower part of the back and rump clearer grey, this shade extending to the tail, the outer feathers of which are slightly tinged with clearer brown, and most of them tipped with white; the tail is not fully grown, but we can count five bars; forehead and eyebrow deep rufous; ear-coverts sooty brown, dashed with rufous; cheeks rufous, longitudinally striped with sooty brown; entire under surface deep rufous, including the axillary plumes and under wing-coverts, flanks, and under tail-coverts; the throat narrowly striped with sooty brown, all the rest of the under surface crossed with transverse bars of sooty brown; the breast-feathers marked with two bars, one broad, and another narrower one near the tip, this second bar on some of the feathers becoming obsolete. Total length 15 inches, culmen 0·8, wing 9, tail 7·5, tarsus 2·3, middle toe, without claw, 1·6.

We have lately received some additional information respecting this bird from Mr. Waters, a very good observer, who is now engaged in arranging Lord Huntly's beautiful collection at Aboyne, and who preserved the specimen in question. Having mentioned to him our idea that the bird might be a sterile female assuming a kind of male plumage, he writes to us as follows:—"I can scarcely think that the bird is a sterile female, as I have since seen a similar one that I have little doubt was a male. It was not more than two thirds the size; and the breast was a dark chestnut: the bars were not visible to me, although I managed to creep within fifteen yards of it. I at first took it for a Red-legged Falcon, but was quite certain, when I approached close to it, that it was nothing but a male Sparrow-Hawk. The iris was dark yellow, nearly approaching to orange." Mr. Gurney, who has examined the Aboyne bird, offers a feasible explanation of its curious plumage. He tells us that he was informed by the late Mr. E. C. Newcome that Peregrine Falcons had a light and a dark phase of plumage, this difference being apparent even in the nest, *i. e.* that young birds which were dark in the nest grew up to be darker-coloured than the others; and this Mr. Gurney has proved to be the case with birds which he himself has reared in captivity. It is certain that some nestling Sparrow-Hawks are darker than others; and therefore the one under discussion may only be a deeply coloured specimen. We cannot, of

course, prove the correctness of our own supposition; but we invite the attention of ornithologists to the subject; and the figure given by Mr. Keulemans will show at once the peculiarity of the individual in question. Mr. Gurney likewise suggests that the rufous-breasted male mentioned above (pp. 5, 9) also belongs to this dark form. This may be the case; and we regret that we have not been able to give a figure of it side by side with Lord Huntly's specimens: an illustration of it, however, will be found on the same Plate as the Irish Sparrow-Hawks; and the bird, being in our own collection, can always be seen by any one who wishes to do so. We may add that Dresser, on a recent visit to Belgium, saw in the beautiful collection of Baron De Selys-Longchamps a fine adult male, which had been killed by the owner himself. The iris was of a rich carmine-red; and the specimen is mounted with eyes of exactly the same colour as it had when fresh killed. This bird is very blue on the back, and has the underparts richly marked with chestnut-brown.

Lastly, as regards the present species in Ireland. Through the kindness of Mr. A. Basil Brooke, we have examined four specimens shot at Colebrooke during the month of January 1872, and we were at once struck by their very dark coloration. As we have mentioned before, English birds are generally darker than those from the Continent; but these Irish specimens are darker still. A female bird, killed on the 26th of January, is especially curious; and Sir Victor Brooke, who has paid great attention to this species, informs us that he has never seen any thing like this individual, which was the last remaining bird of a brood hatched on his estate last year. A reference to the Plate will show the character of the markings; but we may mention as peculiar features the very thickly striped breast, the dark ear-coverts, the broad white eyebrow, and the patch of dark brown on each side of the upper breast. The bars on the wing are seven in number; on the tail six; and it measures as follows:—Total length 13·5 inches, culmen 0·8, wing 8·75, tail 7·0, tarsus 2·4, middle toe 1·6.

Switzerland. In a book written by M. Becker in 1815 on the birds of this country, but which we have not seen, a large form of Sparrow-Hawk is described as *Falco nisus major*, which was elevated into the rank of a species by Dr. Degland in 1849 as *Astur major*. A full account of this supposed species is given by MM. Degland and Gerbe in the second edition of the 'Ornithologie Européenne,' where the following remarks occur (p. 101):—"The habitat of the large Sparrow-Hawk has not been well determined. This bird has hitherto only been observed in Switzerland and in France in the departments of the Somme, Seine-Inférieure, and of the Eure-et-Loir. It builds on the trees; and the nest is constructed of pieces of wood, which are sometimes an inch thick, and 70 millims. in size. The eggs, according to Becker and Meisner, are larger, more rounded than those of *A. nisus*, and only dotted with brown on a greyish white ground. The Comte de Tarragon, who had the opportunity of observing at his leisure the couple which he made the subject of an interesting note, has seen this Hawk come boldly, several times a day, and seize Swallows on the wing, in the court-yard of the dwelling-house, in the neighbourhood of which it had built its nest. He has affirmed that the ground at the foot of the tree where the nest reposed was strewn with the feathers and bones of different birds, chickens being among the number, and that the flooring of the eyry itself was carpeted with bones. The cry of the old birds so much resembles that of a young cat as to be mistaken for it; during the season of love they utter it frequently, and at short intervals."

Then follows the accompanying observation:—"The existence of this bird, constituting, as it does, if not a species, at least a local race, is not generally recognized. MM. Schinz, Delamotte, and De Selys-Longchamps regard it as the old female of the ordinary Sparrow-Hawk. Temminck neither likes to affirm nor to deny its existence, not having seen individuals labelled with this name. Malherbe, who shares the opinion of MM. Schinz, Delamotte, and De Selys-Longchamps, believes this to be so much the better founded in that the female individual which he has seen (in Degland's collection) exhibits an alteration in the beak, caused probably by the influence of climate, or by the nature of its food, or by reason of some disease—that M. Zahnd, Préparateur to the Berne Museum, assured him that he had examined a great number of Sparrow-Hawks, and had never found the large species—that M. Hollandre, the old Director of the Zoological Cabinet at Metz, opened plenty of these Hawks of large size, and only considered them females more or less aged. These objections are not without some reply. If the female bird which has brought them up, and another male, which

M. Delahaye, at Amiens, possesses, have the beak malformed or altered by an accident, they resemble perfectly an individual which forms part of M. Hardy's collection, the beak excepted. In a letter to M. Degland the latter gentleman says:—'I have a male of this supposed species, killed here in May. I believed that I was about to preserve a female, and was much surprised to find a male, well identified by the state of the genital organs. The beak, far from resembling your drawing, which seems to me to indicate a freak of nature, is, like all the other parts of the bird, in every respect similar to that of the common Sparrow-Hawk. There is only a difference in size. Allow me to suspend my judgment.' Here is a fact well established by a practised observer, in whom entire confidence can be placed: a male, judging from the size, has been mistaken for a female. One cannot, moreover, venture to doubt the observations of the Comte de Tarragon. On the other hand, M. de Brécourt has met with, in the neighbourhood of Vernon, many individuals, both males and females, of this race; and he has determined that, independently of the size, it can always be distinguished from *A. nisus* by the absence of grey tints on the upper surface, and of the red on the underside, by the black bands on the tail, which are larger, darker, and more numerous, and by the wings being relatively shorter." M. Gerbe then gives the measurements of M. Hardy's supposed male, in comparison with a female Sparrow-Hawk, tending to show that the male of the large race exceeds in size the female of the ordinary species.

On this same subject that excellent observer, M. Bailly, observes, in his 'Ornithologie de la Savoie' (p. 76):—"We further remark with us some females of larger dimensions than the preceding. My collection contains a young bird 46 centims. in length. As this race is rare in our country, but more common in Switzerland and the north, whence the greater part come to us in autumn and winter, I have examined them and compared them carefully with other, smaller females captured at the same time; and I could never discover any differences beyond those of size. These large females belong to the Large Sparrow-Hawk (*Falco nisus major*) of Becker and Meissner; on the other hand, it is well known that this supposed species is nothing but a different stage of plumage of the ordinary bird." In his lately published work on the birds of Italy, too, Count Salvadori says:—"The Sparrow-Hawk varies a good deal in its dimensions, and large specimens have even given rise to a new species (*Accipiter major*); in Italy, however, individuals are frequently seen which, beyond the dimensions, offer no points of difference; and, moreover, all that I have seen were females."

We have received from Mr. Schlüter no less than six Swiss specimens, and Mr. Howard Saunders has lent us two more; so that we have eight examples now before us, of which the four females appear to us to belong to the large race. We much regret that not a single date is attached to any of the specimens; so that we are unable to guess whether the birds examined were residents or migratory in the country. An adult male, when compared with the Stettin bird described by us, is decidedly more blue-grey above, though similar underneath; the bars on the axillary plumes are broader, but this may be simply due to age; bars on primaries six, on tail five, on the outer feather six, exactly the same as in the German specimen. Total length 13·6 inches, culmen 0·7, wing 8, tail 6·4, tarsus 2·3, middle toe, without claw, 1·3. It may be possible that here we have the true male of the larger race; for the length is greater, and the wings and tail are not fully grown, the bird not having finished moulting. As regards the supposed male of M. Hardy, mentioned by M. Gerbe (*suprà*), we cannot help thinking that the above-named naturalist was after all mistaken as to the sex. Three young males received from Mr. Schlüter only differ from the birds described in being slightly paler, and in having rather more of a grey shade above, while the markings on the breast are clearer and more pronounced; one specimen has the throat distinctly striped, and the markings on the chest are rather oval in shape, and not so triangular as in most of the young males examined; this last bird has five bars on the wing and tail, whereas the other two have six on each. Total length 13–14 inches, culmen 0·65, wing 7·6–7·9, tail 6·4, tarsus 1·15–1·2, middle toe, without claw, 1·3. The specimen in which the variation is noticed is intermediate in size between the other two individuals. Mr. Schlüter has likewise sent us a fully adult female, one of the largest Sparrow-Hawks we have yet seen, and remarkably blue on the back; the breast is much more thickly banded than usual, and the throat more plainly striped, these markings collecting somewhat in the centre, and forming an irregular median gular streak; bars on primaries seven, on tail six, on the outer rectrix seven.

Total length 16 inches, culmen 1·8, wing 9·4, tail 7·6, tarsus 2·5, middle toe, without claw, 1·65. Although one of Mr. Benzon's Danish specimens is about equal in size to this bird, we have never yet seen any thing approaching the bluish slate-colour of the back. Two female Sparrow-Hawks from Ursern are equal in general stature to the specimen above noticed; they are not quite so old, but, like that bird, are very thickly barred underneath, the cross bars being very numerous on the legs, and even extending on to the under tail-coverts. One of these is slightly younger than the other, and has the remains of tawny edgings to the upper plumage; but on the breast the mottling of the chest-feathers has all but disappeared, and the stripes on the throat are very distinct, collecting in the centre, and forming a plain median streak; bars on primaries seven, with remains of an eighth basal one, on the tail six, on the outer rectrix *eight*. Total length 17 inches, culmen 0·8, wing 9·3, tail 7·7, tarsus 2·5, middle toe, without claw, 1·65. The other specimen (in Mr. Saunders's collection) is rather older, and is more grey on the back; the under surface is equally barred, but the stripes on the throat are not so plain; bars on primaries and on tail five, with remains of a sixth at the base of each, the same number on the outer one. We have received from Mr. Schlüter a still younger female, which, beyond the fact that the colour is generally paler and the throat rather thickly striped, does not seem to differ materially from more northern examples of the same age; bars on primaries and on tail six, on the outer rectrix seven, the basal and apical bars being nearly obsolete. These last two birds measure as follows:—Total length 15·4–16 inches, culmen 0·8, wing 8·8, tail 7·5, tarsus 2·3, middle toe, without claw, 1·65. We believe that all these female birds belong to the large race of Sparrow-Hawk said by naturalists to inhabit Switzerland; and they are certainly bigger than the general run of specimens; on the other hand, however, they are equalled in dimensions by some English individuals, though whether these, as well as the Swiss resident birds, exhibit permanent differences from the true *A. nisus* of Sweden has yet to be determined. If we are correct in supposing these four female specimens to be *A. major*, then our birds present exactly opposite characters to those adduced by M. de Brécourt in the work of M. Gerbe above quoted. They are *more* grey than is usual in the ordinary species, and the wings are *not* shorter. As regards the colour and number of the tail-bands, these vary with age, though we have yet seen only one specimen besides the Swiss female with as many as eight bands on the outer feather; yet the other female (in Mr. Saunders's collection) procured from the same place by the same collector, has only six. At present our experience on the subject is this, viz. that Swiss specimens are somewhat larger, much more closely and numerously barred underneath, and have the throat more distinctly and thickly striped; the males seem scarcely to differ.

Spain. Major Irby has given us a female specimen shot by himself near Gibraltar, which is very pale brown, as are also two other females procured by Mr. Howard Saunders in the Sierra Nevada in March 1871. They are whitish about the cheeks, eyebrow, and nape, and also on the underparts, while the edgings to the upper plumage are very pale. None of these birds are quite mature; but two of them have seven bands on the primaries and six on the tail, while the third one has six on the primaries and five on the tail; but even this specimen has six on the outer rectrix like the other two. The cross-barring on the under surface is very close, and comes low down on to the belly; and in Major Irby's bird the bars on the axillars are not parallel. Total length 14·8–15·2 inches, culmen 0·8, wing 8·8–9·2, tail 7·5–7·8, tarsus 2·3–2·4, middle toe, without claw, 1·65. Two females from Seville, obtained on the 18th of November and the 27th of December, 1867, are darker and more slaty than the foregoing examples. The former has the remains of edgings to the feathers of the upper surface; but they are tawny and not whitish; this colour also pervades the nape and hinder neck; bars on primaries seven, on tail six, on the outer rectrix eight. The bird killed in December is decidedly clear slaty grey on the upper surface, with no remains of tawny edgings; but on the under surface there is a trace of the central tawny spots, showing that the bird still retains evidences of immaturity. This specimen is interesting, as it seems to indicate that a bird in the south of Europe gains its adult dress even before the end of the year in which it was hatched. Bars on primaries six, with an obsolete seventh basal bar, on tail six, on the outer rectrix eight, with the faint remains of a ninth at the base of the feather. Total length 14·4–14·7 inches, culmen 0·8, wing 9·3, tail 7·6, tarsus 2·4, middle toe, without claw, 1·6–1·65. A young male, also in Mr.

Saunders's collection, from Seville, killed in October 1868, is very thickly barred on the under surface, several of the cross bars being of a clear tawny colour; bands on primaries seven, on tail six, on outer rectrix seven. Total length 12·8 inches, culmen 0·65, wing 7·5, tail 6·1, tarsus 2·15, middle toe, without claw, 1·3.

Canaries. Mr. F. Godman has been so kind as to lend us an adult male specimen procured by himself at Orotava, in Teneriffe, on the 4th of July 1871. It is, as might be expected in an insular bird, dark slaty grey, like English specimens, rather deeper in colour than the ordinary run of continental examples; the under surface is bright rufous, showing it to be an old bird; bars on primaries five, on tail five. Total length 12·5 inches, culmen 0·65, wing 7·6, tail 6·3, tarsus 2·1, middle toe, without claw, 1·3.

Greece. We have one specimen now before us, which has been lent to us by Mr. T. E. Buckley, who shot it in Macedonia on the 15th of February, 1867. It is very much like a small Goshawk, and answers exactly to Mr. Gurney's description of the female in its first spring plumage. Mr. Buckley likewise notes the iris as "yellow," another point mentioned by Mr. Gurney. Bars on primaries seven, on tail five, on outer rectrix six. Total length 15·3 inches, culmen 0·8, wing 9·2, tail 7·5, tarsus 2·45, middle toe, without claw, 1·6.

Turkey and Asia Minor. We have examined a beautiful series of specimens sent from these countries by Mr. T. Robson, who has likewise addressed to us the following note:—"The eye varies in this species from a light straw-yellow to a dark rust-colour: some specimens have rust-coloured breasts; but these are very rare; they are also of a darker blue on the back and wings than the ordinary specimens, and may be very old birds." In another letter he writes:—"They have an orange-yellow eye, which seems to darken with age to a dark bronze-colour. I have an old male deeper rufous on the breast than the one I sent you, with dark bronze iris; also an old female with darker bands on the breast and bronze iris. Those sent you are first-rate specimens; and you will see their facial features and black heads and back are darker than in the English bird; the latter bird, with the straw-coloured eye, is much scarcer here than the others." Mr. Robson's remarks are borne out by the series he has sent over; but we cannot allow that his adult birds are darker than English specimens. One male sent by him is in Lord Walden's collection, and is pale rust-colour underneath, and in fact agrees capitally in general appearance with the Norwegian bird first described by us. Bars on primaries and on tail six. Total length 12·2 inches, culmen 0·65, wing 7·8, tail 6·2, tarsus 2·15, middle toe, without claw, 1·3. Four other males exhibit different degrees of the rusty tint on the under surface, and bear out Mr. Robson's assertion that the older the specimen the darker grey the back becomes; in fact, the two very old birds sent are nearly as dark as English specimens; bars on the primaries seven, in the two more aged ones six, on the tail six, in the older birds five. This confirms our previous statement that as the bird progresses in age the numbers of bands on the quills and tail diminishes. Total length 11·5–13·0 inches, culmen 0·65, wing 7·7–7·8, tail 6·2–6·4, tarsus 2·15–2·2, middle toe, without claw, 1·3. Mr. Robson lately transmitted to us a young male bird which differs from every other bird of the same age which we have seen, so much so that we think it best to give a description of the specimen.

Young Male shot at Havankeuy, Asia Minor, October 23rd, 1869. Head and hinder neck pale tawny, much varied with white, the centres of the feathers light brown, producing a strongly marked mottled appearance; rest of the upper surface of the body pale brown, slightly inclining to grey on the lower back and scapulars, all the feathers conspicuously margined with pale tawny, and the white bases to the feathers conspicuously showing on the scapulars and secondaries; rump very pale brown washed with tawny, with a great deal of white showing at the base, centre, and apex of each feather; quills very pale brown like the rest of the back, externally margined with pale tawny, in some feathers almost whitish; under surface of wing whitish, with a shade of pale tawny colour on the secondaries, and crossed by narrow bands of dark brown, on the longer primaries five in number, with the faintest remains of a sixth basal bar; tail very pale brown, everywhere pervaded with a shade of pale tawny, especially near the bases of the feathers; all the rectrices margined with tawny, tipped with whitish, and banded with dark brown, the bands being not so broad as the brown interspaces, four in number,

with remains of a fifth, basal bar, outer feather with six bars; lores and eyebrow white, streaked with narrow lines of brown; sides of the face white, the cheeks longitudinally marked with hair-like shaft-stripes of brown, the ear-coverts along their upper margin pale tawny, with rather broader brown shaft-stripes; throat also white, with a very few narrow linear streaks of brown; rest of the under surface of the body white, the breast sparsely marked with oval spots of pale tawny, some of the feathers also exhibiting remains of an irregular bar of brown; towards the belly the tawny markings are more arrow-shaped, those on the sides of the breast and flanks being larger and broader, and taking on the latter the form of bands; lower abdomen and under tail-coverts white, the latter indistinctly tipped with pale tawny; thighs whitish, irregularly marked with arrow-shaped spots and bars of brown; under wing-coverts creamy white, with a few irregular markings of brown. Total length 12·7 inches, culmen 0·7, wing 8, tail 6·4, tarsus 2·1, middle toe, without claw, 1·25.

The iris is stated by Mr. Robson to be "straw-yellow." In the fourth Plate will be seen a figure of this young bird, well illustrating the characteristics of its plumage. We have a shrewd suspicion that there must be another species or subspecies of Sparrow-Hawk in South-eastern Europe, of which probably the above bird is the young, and the Palestine male in Canon Tristram's collection the adult. The wing is longer than usual; and in the old birds the markings on the flanks are peculiar. Lord Walden has one specimen from India belonging apparently to this same subspecies. It is impossible, however, to speak with certainty on this point, inasmuch as we are not thoroughly acquainted with all the changes through which the typical *A. nisus* passes; but certainly these birds, both adults and young, are different from the British Sparrow-Hawks. The figures given in the fourth Plate will serve to explain the differences suggested by us. In Lord Walden's collection is another young male, shot by Mr. Robson at Pettin-a-hore, Turkey, on the 4th of April 1866. Curiously enough this example is still in immature plumage; it belongs apparently to the same subspecies as the foregoing young bird, but is darker brown above, and more barred below. The oval spots on the breast are widening out into bars; and there are more streaks on the throat; the flanks also exhibit the broad white interspaces alluded to in the Palestine specimens mentioned below. Bars on primaries six, on tail six. Total length 13·3 inches, culmen 0·65, wing 7·8, tail 6·7, tarsus 2·15. The middle toe cannot be measured, having been injured by a shot in both feet. Two females sent by Mr. Robson agree in colour and markings with the Spanish examples in Mr. Howard Saunders's collection above referred to; bars on wing six, on tail five, on the outer rectrix six, but on the younger specimen five.

Palestine. Canon Tristram has lent us four specimens from this country, all obtained by himself. One is a female shot near Mount Tabor on the 12th of April 1864, and, from the faint remains of a tawny spot in the centre of the pectoral cross bands, is evidently a bird of the previous year; the rufous tuft on the flanks, however, is very apparent. This specimen is thickly barred on the breast and thighs, the cross bars also extending all over the abdomen on to the under tail-coverts. The general colour above is brown, with a shade of clear grey on the rump, and a few dark greyish-brown feathers are appearing on the scapulars and upper back, while the head is very dark greyish brown; bands on primaries seven, on tail six. Total length 15 inches, culmen 0·85, wing 9·5, tail 7·3, tarsus 2·4, middle toe, without claw, 1·65. A male shot by Canon Tristram on January 9th, 1864, agrees with the adult males from Turkey in all respects, excepting that the white interspaces on the flank-feathers are much broader; and this peculiarity is still further exhibited in another fully adult male shot near Beersheba on the 2nd of February in the same year. In this latter bird the bars on the breast are very broad, and of a brilliant orange rufous, as are also the flanks. In these two old birds the bars on the primaries are seven and five in number respectively, on the tail five and four, the more adult bird possessing the less number of bands. Total length 12·4–13·0 inches, culmen 0·65–0·7, wing 8·0–8·1, tail 6·2–6·4, tarsus 2·15, middle toe, without claw, 1·35. The breadth of the bars on the breast is also exhibited in a young specimen shot near Gennesareth on the 9th of March, 1864. It is a very late date for a young bird to be in the state of plumage in which we find this example; and although the rufous edgings

to the feathers of the upper surface are almost obsolete, the breast is very strongly marked with broad cross bands of a pale tawny colour: an irregular mark of this colour, sometimes oval in shape, sometimes arrow-shaped, appears in the centre of each feather; and the white interspaces on the flank-feathers are very broad, agreeing in this respect with the adult examples before mentioned; bars on primaries six, with slight remains of a seventh, on tail five. Total length 13·3 inches, culmen 0·65, wing 8·0, tail 6·4, tarsus 2·1, middle toe, without claw, 1·3.

Asia.

Cashmere. Lord Walden's collection contains a specimen of a young male obtained in this country in July, at a height of 10,000 feet. The general colour is rather pale brown; and the tawny markings on the breast are also rather light, and thinly distributed; bars on primaries six, on tail five. Total length 11·5 inches, culmen 0·65, wing 7·6, tail 6·0, tarsus 2·1.

India. Lord Walden has lent us several specimens from different parts in India. Two adult males of the true Sparrow-Hawk are in his collection from the Sutlej valley and Mussooree, the one from the last-named locality being a very old male with rufous breast, collected by Dr. Jerdon. Neither of these birds presents any differences from European specimens, as far as we can perceive. Total length 12 inches, culmen 0·65, wing 8·1–8·3, tail 6·8, tarsus 2·15, middle toe, without claw, 1·35. A young male, shot near Umballah by Dr. Scott in February 1867, exhibits considerable remains of the edgings to the feathers of the upper surface; but these are very pale, and almost incline to whitish; on the under surface the arrow-shaped tawny markings on the breast are very plain, but have almost entirely disappeared on the belly; bars on primaries seven, on tail five. Total length 12·8 inches, culmen 0·65, wing 7·9, tail 6·2, tarsus 2·1, middle toe, without claw, 1·3. A young female, shot by the late Captain Beavan at Maunbhoom on the 23rd of December, 1864, is rather dark brown in colour, and all the margins to the feathers on the upper surface are quite obsolete; the breast is thickly barred, but closely resembles European specimens of about the same age, though the throat is more marked with longitudinal stripes than is usual; bars on primaries seven, on tail six, on outer rectrix seven. Total length 14·8 inches, culmen 0·8, wing 9·1, tail 7·2, tarsus 2·25, middle toe, without claw, 1·6. Another immature female, of large size, shot by Dr. Scott at Umballah in January 1867, is also in Lord Walden's collection. It is pale brown above; and the remains of the margins on the wing- and tail-coverts are very light fulvous, almost whitish; underneath the bird is whitish, with pale cross bars of tawny, the breast having several conspicuous arrow-shaped markings in the centre of the cross bar; bands on primaries six, on tail five. Total length 15 inches, culmen 0·8, wing 9·5, tail 7·8, tarsus 2·5, middle toe, without claw, 1·6.

We now come to consider Mr. Hume's *Accipiter melaschistus*, from the Himalayas, which he named in his 'Rough Notes' (p. 128); and, thanks to Lord Walden, we have examined a fine female from Simla in his collection. We believe that this is a good species, and that Mr. Hume was right in giving it a separate designation; for we have discovered another female in the British Museum, among Hodgson's Nepaulese specimens. The dark colour of the upper surface causes the white eyebrow to stand out more plainly; and this was a character which attracted our attention on the first examination of both the above-named examples. The name is well chosen, the bird being of an inky slate-colour, almost black on the head, while its large size also serves to distinguish it. Lord Walden's bird is a female, received from the late Captain Beavan, in whose handwriting there is the following note on the ticket:—"Sent in by Begbie, from Kotgurh." The bands on the primaries are six in number, on the tail five, on the outer feather six. Total length 14·8 inches, culmen 0·9, wing 10·1, tail 8·5, tarsus 2·6, middle toe, without claw, 1·7. The length of wing and tail is sufficient to show the preponderance in size of *A. melaschistus* over the ordinary Sparrow-Hawk; and it is altogether a more powerful bird. It will be noticed that our measurements of the tarsus exceed those given by Mr. Hume; and it may therefore be well to state that ours are made on the under surface, from the bend in the joint. The young female previously described would appear, from the length of the tarsus, also to belong to *A. melaschistus*. The nearest approach to this length of tarsus was in Mr. T. E. Buckley's Macedonian specimen, which had this

joint 2·45 inches in length. The question of the further distinctions between *A. melaschistus* and *A. nisus* may well be left in Mr. Hume's hands; for he has got a fine series of Indian *Accipitres* to work with. We cannot attempt here to account for the differences of size and plumage exhibited by the Indian specimens of *A. nisus* which we have examined: these will only be explained by patient research in that country itself; and the circumstances by which the birds are surrounded must be considered, especial care being taken to find out to what extent the Common Sparrow-Hawk is resident or migratory in India. Moreover, in comparing Indian examples, a series of European specimens, *not* British, must be employed; and Mr. Hume will find some of the aged male Sparrow-Hawks almost as dark as his *A. melaschistus*, and some of the English females almost as powerful; but there can, we think, be no difficulty in distinguishing his new species at a glance, when fully adult. One male bird in the British Museum, the type of Hodgson's *A. subtypicus**, seems to us to differ somewhat from *A. nisus*, and is very dark in coloration; but we could not define any tangible differences. Total length 12 inches, wing 8·2, tail 6·4, tarsus 2·3. These measurements, it will be noticed, are very large; and it will be well to compare the adult male of *A. melaschistus*, when discovered, with this specimen, as it seems probable that the latter title may be synonymous with *A. subtypicus* of Hodgson.

China. The same remarks apply to the birds from this country; for we have not yet examined a sufficient series to enable us to determine whether there are any tangible differences between the Chinese Sparrow-Hawk and true *A. nisus*. The four specimens lent to us by Mr. Swinhoe do not exhibit any great distinctions. Two males, killed respectively in the Nankow Pass (September 20th, 1868) and at Shanghai (November 1868), are very clear blue-grey above, and underneath are barred with bright tawny colour, like the Palestine specimens above examined, which, indeed, they much resemble, but are decidedly clearer blue above; bars on primaries seven and six, on tail six and four, the older bird having as usual a less number of bands; in this specimen also the thighs are much more rufous than in the one killed earlier in the year. Total length 11·3–11·5 inches, culmen 0·65, wing 8·0–8·1, tail 6·6, tarsus 2·15. middle toe without claw 1·3. A female, also in Mr. Swinhoe's collection, killed near Canton, is a very powerful-looking bird: it is just gaining its second plumage, when the bird looks like an adult Goshawk, though the least remains of a tawny spot in the centre of the pectoral bars, and a few *white* edgings to the wing- and tail-coverts, show that it is not fully mature. On the upper surface the bird is clear grey, the head darker, the forehead, eyebrow, and nape being much varied with pure white; bands on primaries seven, on tail five, with remains of a sixth basal bar. Total length 15 inches, culmen 0·9, wing 9·7, tail 7·6, tarsus 2·6, middle toe, without claw, 1·65. The length of tarsus and wing, especially the former, suggests the possibility of this bird being *A. melaschistus*; and the white edgings to the feathers on some portions of the upper surface are also peculiar. We perceive, moreover, that this same character is noted by Mr. Hume in his description of the female in second plumage. Another female, killed at Swatow in December, 1867, is much browner in colour, and has remains of rusty edgings to the feathers, and the shafts to the primaries are pale fulvous; on the under surface of the body the markings are much the same as in European specimens, the tawny mesial spots on the breast-feathers and the bars extending low down on to the flanks and abdomen; bars on primaries seven, the basal one being almost obsolete, on the tail six. Total length 14·3 inches, culmen 0·8, wing 10·0, tail 8·1, tarsus 2·6.

Japan. In the collection of Messrs Salvin and Godman is a female specimen received in exchange from the Leiden Museum. It is immature, but does not differ perceptibly from European specimens, excepting that the edgings on the upper surface of the body are rather pale, and certainly incline to whitish; bands on primaries six, on tail five. Total length 15 inches, culmen 0·8, wing 9·7, tail 7·5, tarsus 2·55, middle toe without claw 1·6. Lord Walden possesses another specimen, marked a male, collected by Mr. H. Whiteley at Hakodadi on the 25th of November, 1854. The measurements would indicate a female, as follows:—Total length 15 inches, culmen 0·8, wing 9·75 (*in life*), tail 8·0, tarsus 2·5, middle toe without claw 1·6. This bird is very pale brown; and the margins to the feathers of the upper surface are pale rusty, becoming whitish on

* Mentioned by Hodgson in Gray's 'Zoological Miscellany,' p. 81 (1844).

the wing- and tail-coverts; the hinder neck is pale tawny, the brown centres to the feathers giving a mottled aspect; the head and nape are much varied with white, especially the former, which has a striped appearance. The under surface of the body is whitish, the throat and upper breast longitudinally striped with brown, these stripes on the latter widening out slightly towards the apex, the lower part of the body crossed by narrow brownish bars; bars on the primaries six, on tail five.

Obs. After a careful study of the present species, which has occupied us nearly two months, we have to regret that the material examined has not proved sufficient to give any definite result regarding the Sparrow-Hawk. It would appear, however, that the bird from the British islands is darker than the ordinary species of the Continent, and that the birds, especially the females, are more powerful. The individuals from Switzerland are decidedly large, and the females get very blue on the back. From South-eastern Europe and Palestine the specimens examined present some differences, and point to the probable existence of a distinct bird inhabiting those parts, and perhaps extending into India. Further research in the direction of India and China will doubtless discover some differences in the eastern bird. Mr. Hume's new species (*A. melaschistus*) is, we think, undoubtedly distinct; but the immature stages require further elucidation. In China, the birds examined are more powerful than most western specimens, while the immature stages appear to be considerably lighter. A much larger series, however, must be examined before any deductions can be drawn, and the history of the Swedish bird fully worked out.

Explanation of the Plates.

Plate I. represents an adult male from Germany on the left, a mature but not fully adult female in the centre, and a young male on the right, these two specimens being from England.

Plate II. represents the fully adult female, with rufous tufts on the flanks, the example being from Switzerland, in our own collection, and probably referable to *A. major*. On the left is a figure of Lord Huntly's curious female bird.

Plate III. illustrates the rufous-breasted male in our own collection, and also the birds (from Ireland) lent us by Mr. A. Basil Brooke.

Plate IV. gives an illustration of the Turkish and Palestine Sparrow-Hawks, which, we believe, are referable to a distinct species, the adult and younger birds being in Canon Tristram's collection, and the young bird on the left being the one fully described above (Havankeuy).

The Sparrow-Hawk is a very well-known and plentiful species, and is found throughout the entire Palæarctic Region. It is more abundant in Europe than in any other portion of this area, and, from all accounts, becomes rarer towards Eastern Siberia and Japan; nor does it seem to be very common in China. It is, however, frequently seen in collections from India, in which country it is partially resident in the Himalayas, but is better known as a winter migrant: at the last-named season it likewise visits North-eastern Africa, where it is common in Egypt, extending into Kordofan and Sennaar.

In the British Islands it is generally distributed, from the high north down to the southern counties; for Mr. J. Brooking Rowe tells us it is common and breeds in Devonshire, and Mr. Rodd says that in Cornwall also it is generally distributed. Mr. A. G. More, in his well-known essay on the distribution of birds in the British Isles during the nesting-season, gives its range as follows:—"throughout Great Britain, extending to the outer Hebrides and north Scottish isles." In his recently published work, Mr. Robert Gray states:—"In the remoter districts of the west of Scotland this daring and destructive bird is not nearly so numerous as the Merlin or the Kestrel. This scarcity is of course attributable to the partiality which

the Sparrow-Hawk shows for wooded and cultivated localities, in preferring to bring up its brood where it can have easy access to partridge-grounds and farm-yards. In such hunting-fields it commits great devastation, and is always in such a rapacious hurry that its thefts are not easily observed. A terrified scream from the poultry is all that one hears, and before a minute is past the feathered rascal is devouring his chicken at a safe distance." Mr. Basil Brooke writes to us:—"Sparrow-Hawks are one of the commonest species of Raptores in Ireland; and although they may not be so often observed as the Kestrel, on account of their different habits, they are, I think, in all suitable places quite as numerous, if not more so." In Norway, according to Mr. R. Collett, it is found within the polar circle, and has been known to breed in East Finmark. It is most abundant in the western portion of the country, both on the islands and the mainland, and winters in the southern coast-regions. On the fell-sides it is found up into the birch region. Nilsson states that it occurs throughout Scandinavia, from Skåne up to Norrland. Professor Newton, in the 'Ootheca Wolleyana,' gives some details concerning eggs in the collection of Mr. Wolley, which must be introduced here, as showing the breeding-range of the species:—"Two from North Finland in 1854, brought by Pekka the Lapp as *Nuoli-Haukka* (*i. e.* Bolt-Hawk), with the feet of the bird, which I recognized as Sparrow-Hawk's before seeing the eggs. Four, brought on 23rd June, 1857, having been found perhaps a quarter of a mile (Swedish) from the village of Kangas-järwi, East Bothnia. The nest was of spruce-twigs and tree-hair, and described as being just like that of a *Piekomma* (*Archibuteo lagopus*), but much less. They seem to be Sparrow-Hawk's. A beautiful nest. Five, Parka-joki, East Bothnia, 1857. Brought 27th June. They were in a spruce tree. Beautiful eggs, and apparently Sparrow-Hawk's, being the third nest of this uncommon bird which I have received this summer." Sommerfelt says that it is rare on the Varanger Fjord; but Von Wright states that it is found all over Finland, being, however, most abundant in spring and autumn, a few, however, wintering there. Kjærbölling records the present species as plentiful in Denmark, especially in the autumn and winter.

According to Naumann it is very common throughout Germany, where it is a resident or a partial migrant. Its seasons for migrating are in September and in March. In May, June, July, and August it is seldom seen, except near the vicinity of its nest, but after harvest-time it begins to wander through the neighbouring fields and groves; but the real migration commences in September, and continues through the winter, though they pass more numerously in autumn and spring. Dr. E. Rey observes in a letter to us:—"It does not breed near Halle, but at Naumberg and on the other side of Bitterfeld, becoming more numerous towards Dessau." Count Wodzicki states that it is abundant in the Carpathian Mountains; and Seidensacher says that it is common in Styria, and found there throughout the year.

Mr. H. M. Labouchere sends us the accompanying note:—"The Sparrow-Hawk breeds in all the pine woods in Holland, and in autumn it may be seen throughout the whole country. In the olden times, when falconry was much practised, the female was often used to catch small birds; but the male was seldom made use of, as being too small." De Selys-Longchamps records it as common throughout Belgium, and sedentary. Krœner also includes it as a resident in his Catalogue of the birds of Alsace and the Vosges, inhabiting the mountains and descending to the plains in winter, when it is often taken in nets. MM. Degland and Gerbe

state as follows:—"The Sparrow-Hawk is resident in Dauphiné and other parts of France; old males rarely appear in the Département du Nord: those seen in October, November, December, and March, at the time of passage, are all young birds or females." In Provence, according to MM. Jaubert and Barthélemy-Lapommeraye, it is the commonest of the birds of prey, and is resident, breeding in almost all the mountainous districts. In the autumn the numbers are augmented by birds that arrive from the north in migration. Bailly also gives the Sparrow-Hawk as one of the most numerous of the Raptores in Savoy, where, he says, it inhabits the fir woods in the hills and mountains. Here, as well as in Switzerland, is found the large race, above referred to as *A. major*. Lord Lilford says that it is common all over Spain, and he found it breeding near San Ildefonso. Mr. Howard Saunders also records it as generally distributed, breeding in the wooded hills, especially near Granada, whence he has obtained eggs. Major Irby writes to us from Gibraltar:—"The Sparrow-Hawk is called 'Gavilan' and 'Milano jaspeado' (Marbled Kite); but the first name is also applied to the Goshawk in Andalucia. It is resident, but not very numerous, being more abundant in winter. I found a nest with two eggs on the 13th of May, 1870, and another, with five eggs, on the 10th of May, 1871, in the cork wood." The Rev. A. C. Smith says that it is a common bird in Portugal. Major Irby likewise informs us that it is resident in Marocco; and Mr. C. F. Tyrwhitt Drake writes:—"I shot one at Tangier, and a second at Tetuan: I saw a few others. It breeds on the mountains west of Tetuan." Mr. Vernon Harcourt records it as a straggler in Madeira; and Dr. Bolle says it is "resident in the Canaries: abundant in the fruitful valleys of Northern Teneriffe: said to be numerous on Gran Canaria." Mr. F. Godman has lent us a specimen procured by him at Orotava, in Teneriffe. In Algeria, according to Loche, the Sparrow-Hawk is very common; but in some localities it is probably not so plentiful; for Taczanowski writes that it was "rarely to be met with in the forests of the mountainous country. I saw a pair at Aures, about the middle of March, busy restoring an old nest."

Mr. C. A. Wright gives the following note respecting the Sparrow-Hawk in Malta:—"Pretty common in spring and autumn, and seen occasionally throughout the summer and winter. It is most frequently met with in October and November." Mr. A. Basil Brooke writes to us:—"I found this bird scarce in Sardinia; but they are said to be very common in winter both by Salvadori and Cara." Salvadori states that "it is extremely common in Italy in autumn at the time of the passage of the Finches &c., which it follows up on their journey. In May the return and migration takes place; but some remain throughout the winter. It nests in Northern Italy, according to various authorities." Professor Doderlein observes that "it is generally abundant throughout Sicily, and, to a certain degree, resident, as some pairs nest in the wooded mountains. In autumn it follows up the flocks of small birds; some remain to winter, whilst others continue their course to Africa." In his paper on the birds observed in the Mediterranean, Captain Sperling gives the following note:—"At sea, between Malta and Corfu, a hen Sparrow-Hawk dashed by me like an arrow, grasped a small bird in her claws, and after soaring round the ship for some time, settled on the mast-head, where she deliberately demolished her victim. She did not depart after her meal, but roosted on the ship that night, so that I was enabled to catch her as she slept. When Hawks can obtain sustenance at sea in this manner, it will account for their occasionally appearing within boundaries which are not natural to them."

Lord Lilford found it very abundant in winter in Epirus, Acarnania, and Corfu, a few remaining to breed.

Lindermayer says that it is found throughout the year in Northern Greece, but is much commoner in the winter and spring than at other seasons of the year. It breeds commonly in Northern Greece. Dr. Krüper writes to us that it is found in Greece during migration, and occasionally, though rarely, remains to breed on Parnassus, Mount Taygetos, where he found a pair breeding near the domain of *Accipiter brevipes*. Messrs. Elwes and Buckley found the present species common in most parts of Turkey, and much more familiar in its habits than in England. M. Alléon states that it passes through Turkey in spring and autumn, but in larger numbers in the latter. It nests in the low woods around the forest of Belgrade, but is not very common. Mr. Robson, of Ortakeuy, sends us a note, as follows:—"This species is a constant resident in Turkey, and is pretty plentiful, though not so common as the Kestrel; they are partly migratory, most numerous in spring and autumn, when they follow the small birds on their migration. Many are captured in the autumn, when they fly at the wild birds fluttering on the limed twigs, and they are then easily taken by the bird-catchers. Few of them are seen near the Bosphorus in summer." We have already referred to the extraordinary young birds sent to us by Mr. Robson, and recorded our belief that a species or subspecies exists in South-eastern Europe, probably extending into Palestine; but the question awaits further research. Strickland met with the Sparrow-Hawk near Smyrna; and Canon Tristram gives the following note respecting its distribution in Palestine:—"Very common about olive-yards and clumps of wood in winter in the south, especially between Jerusalem and Jaffa. It also resorts to the oases and shrubby spots near the Dead Sea; and is plentiful about the Sea of Galilee, the town of Nablous, and wherever small birds, especially the Marsh-Sparrow (*Passer salicarius*), are found. It disappears in April, but still remains in the high grounds of Lebanon and the Anti-Lebanon." Mr. E. Cavendish Taylor, in his essay on the birds of Egypt, gives the following account of the species:—"In Egypt, where this bird is not persecuted as it is in England, it is comparatively tame and familiar; and I have often seen it in the city of Cairo flying about and perching on the house-tops on the look-out for Sparrows or any other small birds that might come within its reach. It is abundant all the way from Cairo to Assouan, especially frequenting thick groves of acacia. Although generally in pairs, I did not succeed in finding a nest up to the end of March. I shot some old females of unusually large size; two that I skinned measured fully sixteen inches in length each." Dr. A. Leith Adams writes:—"It seems more common in Nubia than in Egypt, where it may be often observed, scouring along the narrow strips of cultivation on the river's bank in quest of the Chiff-chaff, Pied Wagtail, and Red-throated Pipit." In his new work the 'Ornithology of N.-E. Africa,' Dr. von Heuglin gives the range of the Sparrow-Hawk as follows:—"Frequent in Egypt during the winter, occasionally in Arabia, and along the Nile, southwards to Kordofan and Sennaar."

Returning again to South-eastern Europe, Professor von Nordmann states that this bird is "common everywhere on the steppes, especially in Imeritia, Mingrelia, Ghouriel, and other provinces bordering on the Black Sea, and is resident. A few sometimes pass on into other localities; but the larger number do not quit this country even during severe cold. Those that come probably from the north and migrate for the winter into warmer climates, appear near

Odessa in large numbers late in November, and reappear about the end of February." Radde writes:—"The Sparrow-Hawk winters occasionally in the non-evergreen woods at Jeni-Sala (South Russia), feeding principally on the Thrushes that remain over winter with us." De Filippi found it in Persia.

Dr. Jerdon, in the Birds of India, remarks:—"The Sparrow-Hawk of England is a cold-weather visitant to India, coming in very regularly about the beginning of October, and leaving again about the end of February or March, according to the locality. It is found throughout India in suitable places, chiefly in hilly and jungly districts, but not in dense forests in general. I have got it on the Neilgherries; abundant on the eastern Ghauts, where many are caught every year, and in all the hilly countries of Central India, and on the Himalayas. At Darjeeling it may frequently be seen in cleared ground, circling about on the watch for any bird that may pass over." More recently he writes:—"I believe that a few pairs only breed on some of the higher ranges of the Himalayas. I have killed it in July in Gulmurg, in Kashmir, at 10,000 feet elevation. When Dr. Stoliczka says it is 'more common on the lower hills than in the interior,' I presume he means either very early in the year or in the autumn, *i. e.* during the periods of migration; for I greatly doubt its breeding in such localities." Mr. Hume's 'Rough Notes' contains the following observations:—"A Sparrow-Hawk, but whether the present or the next species (*A. melaschistus*) I am unable to decide, breeds commonly enough in woody valleys in the interior of the Himalayas. I have repeatedly seen their nests, and once (in May) took one about two marches on the Mussourie side of Gungootree, containing four bluish-white red-blotched eggs, exactly like (it seemed to me) the Sparrow-Hawk's eggs I had so often taken as a boy at home. Unfortunately I was then a mere sportsman, and troubled myself little about any thing but game, and therefore neither shot the parent nor preserved the eggs. Captain Thompson, of Simla, assures me that two pairs of the Sparrow-Hawk breed yearly in Anandale, just below Simla, laying in May and June." Dr. Leith Adams records the Sparrow-Hawk as pretty common in the N.W. Himalayas; and Major Irby procured it at Alumbagh in January 1858. Major Bulger saw this bird frequently in Sikkim, but only obtained two specimens. It even extends into Ceylon, according to Hartlaub; but this statement probably rests on the authority of Kelaart, who most likely mistook the species.

In Siberia Pallas says it is not uncommon in the temperate parts, but only remains in the south during the winter, on account of the cold. Dr. von Middendorff found it everywhere on the Stanowoj mountains, where he first saw it on the 26th of April; and Dr. von Schrenck says "that he observed a Sparrow-Hawk on the Lower Amoor in July 1855, but did not succeed in procuring it."

This bird was first included in the Japanese avifauna by MM. Temminck and Schlegel; and the catalogue of the Leiden Museum, recently published by the last-named author, shows a good series of specimens contained therein from this particular locality. Captain Blakiston writes in his paper on Japanese birds in 'The Ibis':—"My specimen of this Hawk was obtained from a native bird-catcher; but I have no reason to think that it was brought from any distant locality; in fact, the Japanese at Hakodadi, although passionately fond of keeping cage-birds, confine themselves almost entirely to their native feathered friends." Mr. Whitely also shot one example of the present bird at Hakodadi, on the 25th of November 1864. Mr. Swinhoe gives

its range in China from Canton to the Amoor, and he has likewise met with it in Formosa. During his recent expedition to Hainan only one specimen occurred to him, and that was on the 20th of February at Tai-ping-sze (Central Hainan).

The late Professor Macgillivray gave a charming account of the Sparrow-Hawk's habits, which we quote almost entire:—"The manner of life of this elegantly formed and marvellously agile little Hawk is better known than that of the congenerous Goshawk, it being the most common and most extensively dispersed of our native species of diurnal plunderers. In spirit, activity, dexterity, and daring, it has no superior, and in these respects contrasts strongly with the Eagles and Buzzards, which yet are not sluggish birds, although we are apt to consider them as such, when we compare them with the Falcons. The ground, the tree, the fence-rail, or the stone wall merely afford it a resting-place, or a point of observation; for, like most of the Raptores, it is incapable of walking efficiently, the curiously prominent pads on its soles, and the beautifully taper claws rendering such mode of progression impracticable, no Hawk having the power of retracting the latter organs in the manner of the Feline tribe, or in such a degree as to prevent their points from touching the ground. Its flight, however, is in some respects unrivalled; and while its wings are of sufficient length and breadth to give it a velocity nearly equal to that of the Merlin, its tail is so large and mobile as to enable it to execute with never-failing promptitude the most abrupt turnings, as well as the most delicate declensions.

"There it comes, silently and swiftly gliding, at the height of a few feet, over the grass field, now shooting along the hedge, now gliding over it to scan the other side, and again advancing with easy strokes of its half-expanded wings. A beautiful machine it is certainly, and marvellously put together, to be nothing but a fortuitous concourse of particles, as some wise men, believing no such thing themselves, would have us to believe. As if suspecting the concealment of something among the grass, it now hovers awhile, balancing itself with rapid but gentle beats of its wings and a vibratory motion of its expanded tail; but, unable to discover any desirable object, away it speeds, bounds over the stone wall, and curving upwards alights on that stunted and solitary ash, where it stands in a nearly erect posture and surveys the neighbourhood. From such a station it will sometimes dart suddenly on some perhaps unsuspecting bird not far off, but more frequently it proceeds to a distance before it finds its prey. Should it meet with a Lark or a Thrush in its way, it may pursue it in open flight, gliding rather behind than above it; but this is not its usual mode of hunting, and frequently its efforts prove unavailing, for the object, of pursuit by gliding to either side during the swoop of its enemy, and at length finding refuge in a hedge or thicket, often escapes with its life. With a swift but stealthy pace it speeds in silence, casting keen glances beneath and around, until finding a bird unprotected and heedless of its approach, it clutches him in an instant. So rapid is the descent of this plunderer that to one who has unexpectedly witnessed it, nothing can be much more surprising. I have seen a Sparrow-Hawk rush headlong into the midst of a dense thicket, and suddenly emerge on the other side carrying off a Thrush in his talons. How a bird at its utmost speed could thread its way between branches and twigs seems almost incredible. When it steals upon the farm-yard or orchard, it will sometimes make a dash at a bird without succeeding, and pass along; or, should the bird fly off, it may pursue it in open flight. On two occasions of this kind, I have seen a Thrush escape by entering a house; and sometimes the Hawk

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has been known to follow the trembling fugitive thither. When a favourable opportunity occurs, it is often quite heedless of the presence of man; and I have seen one come suddenly upon some Pipits and Wagtails feeding in a field in which three ploughs were going, and carry off one of the Pipits from within a few yards of one of them. While some Sparrows were quietly enjoying the pickings of some horse-dung in one of the streets of Edinburgh, on which many persons (including Mr. Audubon and myself) were passing, a Sparrow-Hawk, glancing among them, carried one off in a moment."

"This clever little bird never soars in lazy gyrations like the Eagles and Buzzards, nor does it follow a circling course while looking for food. Its range of distinct vision cannot be very great, as it does not appear to observe birds in a hedge or field at the distance of some hundred yards; and its low flight, at the height of only eight or ten feet, indicates a correspondingly short extent of sight. But then the quickness of its perception is astonishing; for when sweeping along nearly at full speed, it will readily discover any object favourably situated for being seized. In the fields, it preys on Leverets, young Rabbits, Field-mice, Partridges, Larks, Pipits, and Wagtails; by the hedges and in woods, on Blackbirds, Thrushes, Sparrows, Chaffinches, and Buntings. Although it very frequently visits stack-yards, gardens, and the vicinity of houses, its chief object seems to be to obtain small birds, not to look after the poultry; yet it has been known to seize on Pigeons, and more frequently on Chickens. Montagu says he has 'frequently known them carry away half a brood of the latter before the thief was discovered. They fly low, skim over a poultry-yard, snatch up a chick, and are out of sight in an instant.' Its depredations in the fields and in game-preserves render it highly obnoxious to the keepers, so that it is often shot; its occasional attacks upon tame birds in cages render it hateful to the fair owners of these interesting pets; and its visits to the farm-yard and barn-door are little approved of by thrifty housewives. Its good qualities, its indomitable courage, love of liberty, extreme agility, and elegant figure, are forgotten, and all classes join in persecuting the little plunderer. It does not appear that it has any deadly enemies among birds or quadrupeds; and of the former few ever attempt to molest it, unless when it has attacked a nest, and is bent on carrying off the young. A pair of Missel-Thrushes will sometimes defend their nest against it, and that successfully, although sometimes one falls a sacrifice.

"When a Sparrow-Hawk suddenly appears in a place where there are many small birds, they usually betake themselves to the nearest wood or thicket, where after a little they give vent to their feelings in loud cries. Sometimes it is pursued by birds of various species, which, although incapable of seriously molesting it, continue to hover round it, uttering cries expressive of their alarm and hatred. I have seen one flying rapidly off in the evening with a bird in its talons, followed at full speed by a Wagtail uttering hurried cries all the while. In this case it is probable that the Hawk had carried off its mate or one of its young. I think, however, that the birds on which it usually preys do not gather about it or pursue it, unless some of their relatives or companions have been swept away by it. Often, however, a flock of Swallows follow a Sparrow-Hawk a long while, hovering at a considerable distance, and keeping up an incessant chatter. The prevalent idea on this subject is, that small birds being the natural prey of Hawks, they have an instinctive antipathy to their destroyers, and when one of the latter is observed they call to each other, and, collecting in a band, assume a sufficient degree of courage to impel them

to pursue and harass him, knowing that their number secures them against an attack, as in his perplexity he cannot fix upon an individual. To this it may reasonably be objected that, having no power, even when united in bands, to oppose a Hawk, these birds ought naturally to conceal themselves from his view, in order to ensure their safety. After attending to this subject for some time, and observing that in most cases the Hawk when pursued by small birds had one of them in his talons, and was thus so encumbered as to be incapable of molesting them, I am still of the same opinion as when I offered the following solution of this question:—'How does a bird, which under ordinary circumstances manifests extreme terror at the sight of another, under other circumstances muster sufficient courage to pursue it? Is it certain that a Hawk is unable to single out a bird from a flock? or is there more reason to think that a troop of Swallows, which have no weapons that could inflict the least injury on a Hawk, could in the smallest degree affect it with fear? It is observable in our own species, that cowards, the moment the danger is over, assume so much more courage than is natural to them that, in the midst of the excitement, they will even make a venture which in ordinary circumstances they would not have courage to do. The small birds that we speak of are all cowards, in the presence of Hawks at least; and when one of the latter comes unawares among them and carries off one, or passes over without pursuing them, they soon recover from their fright; and being elated beyond their ordinary state, in a degree corresponding to their former depression, they muster spirit enough to go on for some time with a mock pursuit.' It is this sudden revulsion when the danger is over, that renders clamorous in the trees birds which were perfectly silent when the Hawk was gliding past them.

"With the view of presenting as complete an account of this bird as possible, I shall now introduce a notice respecting it from the pen of my friend Mr. Hepburn:—

"'The Sparrow-Hawk is common in all the cultivated part of East Lothian. When searching a field, it sometimes hangs in the liquid void precisely like the Kestrel. In the dim twilight I often see it coursing about its favourite hunting-grounds, on the look-out for some bird that may have incautiously roosted within reach of its formidable grasp. For many years an individual of this species has almost daily visited our stack-yard during the winter season, generally betwixt noon and three o'clock. As he glides in lowly flight over the fields to his larder, as the stack-yard may be termed, his detested presence is first announced by the "twink" of some Chaffinch perched on a tall tree. Its companions repeat the alarm cry, and in company with Buntings and Linnets fly up to the trees, a few perching on the bushes. The Sparrows feeding near the barn-door seek the middle of the neighbouring hedge, or betake themselves in a compact flock to the shelter of the evergreens in the garden, where they remain perfectly quiet till the danger is over. Not so the other birds, which from their commanding position emit cries expressive of their fears. The clear notes of the Chaffinch are distinguishable above the rest. Two or three hundred of these birds twinking in chorus produce a fine effect on a calm frosty day like this. The Hawk now perches for a minute or so on the hedge, and, as the stacks screen him from view, the fears of the poor birds subside for a little; but there he comes; swift as the arrow from the bow he rushes from between the stacks, gains the plantation, dashes fearlessly among the bushes after the fugitives, clutches his quarry, and is off as swiftly as he came. Sometimes, when he has stealthily approached the garden, without being observed,

perhaps the noise of a party of Sparrows squabbling amongst themselves attracts his attention. Swift as thought he glides along the walk; if the bushes are too thick for a dash, he flies rapidly round them; then woe to the wretched creature that first meets the glance of his keen eye. At another time he has found a flock of Sparrows in the close-pruned hedge that surrounds the stack-yard. He first beats one side, then the other, the birds always betaking themselves to the opposite side; and thus he persecutes them till one in its fright exposes itself. A shriek follows, and all is over. I only once observed this Hawk rush from a great height in the air upon a flock thus circumstanced. Its usual manner of approaching its prey is by gliding close over the ground.

"'It follows an ingenious method of procuring a choice supply of food from August to November, when the leaves are on the trees that surround our dwelling. Not far from the garden-hedge is a row of tall willows. Within the garden, and not fourteen yards from them, stands a beautiful white birch, which shoots up to the height of about twenty-four feet. Its stem is entwined with an aged honeysuckle, in which for the last three years ten pairs of Sparrows have built their nests, which in some places embrace the entire circumference of the stem, while in others they are piled irregularly above one another. Softly and warily does the Sparrow-Hawk glide into one of the topmost boughs of the willows; and keen are the glances of his bright eye, which grows brighter when he sees the Sparrows bickering in the honeysuckle. Balancing himself on his perch, with half-opened wings, and levelling his neck for flight, down he rushes; the yelloping instantly ceases; then what a rustling of the leaves of the neighbouring bushes, followed by a death-yell! and now you see the bold robber bearing away his bloody victim to some quiet corner to devour it at leisure. I have seen Pipits, Larks, Wagtails, and Swallows evade the swoop of this fell destroyer by dexterously darting to one side, rising above the pursuer, again darting aside, and rising as he descends, and so on, gradually diminishing the distance from the earth, until the persecuted bird finds a shelter, or the tyrant gives up the pursuit in disgust. What a treat it is to behold the elegant evolutions performed by both parties!

"'This Hawk preys chiefly on small birds, Partridges, leverets, and young rabbits. Should the gamekeeper disturb it when feasting, he sets a trap near the remains, and is often successful in capturing it. It is sometimes caught in traps baited with dead rabbits. It is very fond of washing. Here it prefers the branches of the old oak in the wood for building its shallow nest of slender twigs, in which it deposits from three to five eggs. The young I have seen fledged so late as the 30th of July; but the usual time is about the end of June.

"'One evening in June 1838, on my way home from fishing, I walked through a wood near Ruchlaw Mill. Observing a number of rabbits gambolling in a green glade, I stood to see their sports, when in a short time a Sparrow-Hawk swept down from a neighbouring ash, and fixed his claws into an old one, which rushed shrieking to the brink of a precipice overhanging Whittingham Water. Running forward, I arrived in time to see both saved from certain death, by being caught by a briar bush growing on a little natural platform. Still the Hawk kept his hold till I shouted, on which he flew off.'

"'In one of the plantations on Boghead,' Mr. Weir writes, 'for several years past a pair of Sparrow-Hawks have reared their young, in the deserted nest of either the Carrion-Crow or

Magpie. They were uncommonly bold, and with the rapidity of an arrow skimmed over the ground. Amongst Partridges, Pigeons, and other small birds they committed great destruction. With almost unerring aim they pounced upon their prey. From a hut formed of the branches of trees I watched for several hours the habits of a pair of these voracious birds whilst they were engaged in feeding their young, which were nearly half-fledged. During the time that I remained in it the female continued to sit upon them. The male, sometimes at shorter, and at other times at longer intervals, alighted upon the top of a tree, at the distance of about forty yards from the nest, with a bird in his talons. The female always took it from him, and divided it amongst her nestlings. Sometimes he arrived with a Blackbird or a Thrush, but more frequently with a Lark, a Yellow Bunting, or a Chaffinch. Being anxious to know whether the male is in the habit of feeding his offspring, I one morning, in a place of concealment, watched another pair of them for four or five hours. The male always alighted, as in the former case, with a bird in his claws, and called upon his mate, who came and caught hold of it in her bill. I shot her as she was carrying it to her young. About nine o'clock in the morning I went home. At six in the evening I returned with a boy, who climbed the tree to see what was in the nest. He had no sooner looked into it, than with astonishment he exclaimed, 'Ah! Sir, the poor little things are gasping.' They were in fact almost suffocated by the dead birds about them. He threw down no less than sixteen, amongst which were Larks, Yellow Buntings, Chaffinches, Hedge-Sparrows, and Green Linnets. I took home the young, which were four in number. They seemed not to have been fed during the day, as they were exceedingly hungry. In these two instances it would appear that the male bird provided the food, but did not give it to his family. Whether this is always the case with the Sparrow-Hawk I cannot ascertain until I have further opportunities of observing their habits.'"

For the following original observations we are indebted to our friend Mr. A. Basil Brooke, who writes from Colebrooke:—"The habits of the Sparrow-Hawk are entirely woodland; and it is rarely to be found at any distance from some cover, which they hunt through with a gliding flight, often close to the ground, with a rapid noiseless swoop, over hedges and round corners, surprising their prey long before the latter has any idea of danger. They will take almost any thing that comes in their way, from a well-grown young Pheasant or Rabbit to a small bird; but I think their principal food consists of Blackbirds, Chaffinches, &c. Frequently here, when the keeper is rearing Pheasants on a certain hill, an old hen Sparrow-Hawk, who has her young in the vicinity, makes it her habit to pay him daily visits; and in spite of all his vigilance and watchfulness, so sudden and rapid are her swoops that she often succeeds in robbing him before his face; sooner or later, however, she pays the penalty of her temerity with her life. In the woods about here they generally build their own nests, sometimes, but rarely, renewing the old one of the year before. They are very local, always inhabiting the same wood year after year, notwithstanding that the old birds had been killed the previous season. The young are generally four in number; but on one occasion I have found six. They hang about the wood in which the nest is situated for some time after they have quitted their habitation, squealing and crying loudly, and they can thus be easily discovered and destroyed. Sparrow-Hawks hunt till very late in the evening, and roost night after night in the same wood, choosing the most swampy, wet, dismal spot; and they may be seen gliding noiselessly into their roosting-place just as it is getting quite

dark. During the period of incubation the female never hunts for herself, but is supplied with food by the male, who brings it to a picking-post, generally an old stump or root of a fallen tree about forty or fifty yards off from the nest, where she flies to meet him, sometimes in her impatience taking the food from him in the air. If the female is killed when the young birds are unfledged, the male bird will continue feeding them until they are able to fly. In one instance my brother (from whose personal observation most of these notes are furnished) shot an old female as she flew off her nest, which contained eggs, and then set a trap on the nest for the male; but, to his surprise, on looking at it the next day, he found another female caught; this he thinks was only accidental, and that she happened to be passing through the wood at the time and settled on the nest, with no intention, however, of hatching out the eggs. I see that one of Macgillivray's correspondents states that it is difficult to catch a Sparrow-Hawk in a trap; but we have found it here a very easy matter, as the bird will always come to recover any game which it has struck down itself; and the trap only requires to be carefully set. Another point I may notice in the work above referred to, is the statement that this Hawk does not soar; but I myself have several times seen them flying round and round in circles, till at last they were lost to sight aloft. This, however, is not a common habit of this species." Mr. Robson also sends us a note:—"In Turkey they prefer wooded localities to breed in, building their nest in woods and in the numerous glens and ravines which abound in this country, by the side of mountain-streams. These are studded with trees and creeping plants, and from thence they have ready access to the mountain-sides covered with low brushwood and scrub, where they can easily procure their food, which consists principally of birds, though sometimes mice are found in their stomachs." Mr. A. E. Knox, an excellent field-naturalist, gives the contents of a Sparrow-Hawk's larder:—"There were fifteen young Pheasants about the size of Quails (some rather larger), four young Partridges, five chickens, a Bullfinch, two Meadow-Pipits, and two Larks, all in a fresh state."

In his interesting little work the 'Birds of Sherwood Forest,' Mr. Sterland observes:—"Its appearance is the signal for a general commotion; and the cries of alarm which are uttered when first the presence of the enemy is detected are well understood by various species, and Swallows, Linnets, Chaffinches, and others instantly muster at the summons and join in hot pursuit. I have noticed on these occasions that Linnets and Chaffinches usually follow in steady chase, while now and then one more bold than his fellows will dart forward and make a momentary attack on the Hawk, and then rejoin his companions; but the Swallows, with much greater power of wing, fly wildly to and fro, now darting across his path, then shooting ahead and again returning, all the time uttering cries of fear and hostility. The Sparrow-Hawk seems generally to hold all his noisy persecutors in supreme contempt, excepting that now and then his patience becomes exhausted, and, with a fierce sally, he sacrifices one of them to his resentment. In this it shows more spirit than the Kestrel, which I have often observed to be apparently annoyed, and more anxious to escape such boisterous recognition than to become the aggressor. I have often remarked how quickly the poultry in my yard have caught sight of a Kestrel or a Sparrow-Hawk on the wing. The watchful cock is generally the first to utter his warning cry, which is immediately repeated by the hens; and all, with head turned sideways, scan the course of the intruder, those who have chickens instantly calling them together for protection until the

danger is past. We hear from all parts of the country of the large amount of damage done to the crops by Woodpigeons. In some districts of England and Scotland meetings have been held to devise means for their destruction; for they have enormously increased of late years. We cannot wonder at this; for their natural enemies are unrelentingly extirpated; and the Sparrow-Hawk is especially a foe to the Woodpigeon, preferring it to any other quarry. During the first week in the present year (1869) a flock of these birds passed over Barnet which was estimated to be a mile long, and to contain from 8000 to 10,000 in number."

In our account of the Hobby we have given an anecdote of its habit of teasing the Cranes; and in Mr. Buller's 'Birds of New Zealand' a similar case is detailed of the Falcon of the country, *Hieracidea novæ zealandiæ*. The Sparrow-Hawk would seem occasionally to indulge in this propensity, as will be seen by the following note taken from Thompson's 'Birds of Ireland:' —"Once, at the end of July, when walking along the side of the river Lagan, near Belfast, I was attracted by the loud screams of Herons, which appeared above the trees at the north-west extremity of Belvoir Park. A couple of these giants of the air kept flying above the tops of the trees with tremendous uproar, in consequence of the presence of a single Sparrow-Hawk! This bird was circling about; and the Herons awkwardly and quite unavailingly endeavoured to strike him. Flying quite at ease, his turns were so short, and at the same time so full of grace, that he seemed to laugh to scorn their heavy lumbering movements. The Herons' savage cries were apparently (evidently might almost be said) caused by the Hawk's make-believe attempt to carry off their young, as they were particularly violent and vociferous whenever he made a swoop (as I remarked him to do thrice) at the top of a particular tree. It seemed a mere play or bravado on the part of the Hawk, as he could easily, in spite of the Herons, have borne off the contents of the nest at any time, were the prey not too bulky for his purpose. Mr. R. Longtry has not only observed a wild Sparrow-Hawk strike his Sea-eagles when perching on their sheds, but when his Golden Eagle was on wing has seen one of these birds strike it in passing, and once even witnessed the Hawk's turning back and repeating the impertinence."

Many records have been published of the audacity of the Sparrow-Hawk; and Mr. Robert Gray gives the following account:—"A very singular instance of daring in a Sparrow-Hawk occurred at Dingwall, in Ross-shire, in November 1870. The bird seeing a caged Canary suspended near a window in a house of Mr. Grigor, from whom I learned the details, dashed through a pane of glass, broke the cage with the impetus of the same blow, and killed its prey as if the deed had been accomplished without any such obstruction as glass or wires. When apprehended it was found that the Hawk had, some time before, been trapped by one of its legs, which was wholly gone from the thigh downwards." These notices might be varied *ad infinitum*; for the boldness of the present species forms the subject of frequent communications to the 'Field' and other scientific periodicals. Herr Karl Müller (J. f. O. 1868, p. 245) gives an account of a Sparrow-Hawk attacking a Squirrel.

The Sparrow-Hawk prepares its nest in April, and either builds one itself or else makes use of a deserted Crow's nest, which it lines with moss and hair. The eggs, which are sometimes as many as six or seven in number, are white in colour, with a bluish tinge, marked all over with patches and dashes of reddish brown, occasionally varied with purple. We have a series of eggs now before us, out of Dresser's collection, procured in various parts of Europe, which vary from

bluish white with a few faint reddish spots, to dull white so heavily blotched with chestnut-red that the ground-colour is only visible on about half the surface of the egg. In size they vary from $1\frac{1}{2}$ by $1\frac{9}{40}$ to $1\frac{25}{40}$ by $1\frac{13}{40}$ inch. Dr. E. Rey tells us that the average size of fifty-seven eggs from Anhalt and Westphalia is 39·8 by 32·4, the largest measuring 41·0 by 34·5, and the smallest 37·0 by 31·25 millimetres respectively. Fresh eggs were obtained from the 10th to the 30th of May; and the normal number appears to be four to five. We have already referred to Mr. Brooke's finding six young birds on one occasion; and Mr. Collett confirms, in a letter, the fact of their sometimes laying six eggs. He adds:—"If all but one are taken it will lay more. Sometimes its eggs are so light-coloured as to be almost unspotted, only being known by their greenish tinge." Hewitson's notes on the nesting are as follows:—"The Sparrow-Hawk, although one of our commonest birds of prey, is not nearly so numerous as the Kestrel. Its eggs may sometimes be found upon the ledge of some lofty cliff, but are much more frequently to be met with in trees, for the most part occupying the usurped nest of a Crow or Magpie—sometimes, it would appear, however, in a nest of its own construction. Mr. Selby says that it occasionally makes its own nest in low trees or thorn bushes—that it is flat and shallow, and very similar to that of the Ring-dove, but rather larger, and is composed of slender twigs."

The estimates of the capabilities of the Sparrow-Hawk for the purpose of falconry vary much. Thus Dr. Jerdon, in his 'Birds of India,' says:—"It is very highly prized by the natives for falconry, being very speedy, and is used to capture Partridges, Quails, Courier Plovers (*Cursorius*), and even Rock-Pigeons (*Pterocles*)." In Mr. Hume's 'Rough Notes' (i. p. 125) occurs the following passage:—"As regards the Sparrow-Hawk commonly flown by native falconers (whether the present species or *A. melaschistus* I cannot say), Mr. R. Thompson writes as follows:—'Though a highly prized bird by the natives for its speed and courage, it does not really come up to the Besra (*Accipiter virgatus*) even for courage; its powers of endurance are much less; and it is less easily reclaimed. Many birds appear regularly at Nynee Tal every year about October. I have had several specimens alive, sent in to me from the interior, where they have been caught in traps set for the Goshawk, having readily flown at the live-Pigeon bait. It is a delicate and difficult bird to keep, and with all its boasted speed is but second to the Besra for every kind of hard field- or wood-work. What the Besra would do at the first throw, the other could not do till the quarry was exhausted. To hunt with the Basha requires a deal of tact. You must not throw it whilst the wind is high; you must keep well within the proximity of woods and trees, and not baulk it with birds larger than it can afford to strike and clutch.'" Then Mr. Hume adds:—"One thing is to be said: the native falconers generally overdo the training of this bird and make it too delicate. Probably if more hardily reared and trained it would do better and turn out as tough and useful in its way as its larger relative, the Goshawk."

An excellent account of the training of the Sparrow-Hawk for the noble art is given in Messrs. Salvin and Brodrick's 'Falconry in the British Isles' (p. 111); and although we cannot give the whole of the description in detail, the rarity of the work in question, and the excellence of the essay, induce us to lay before our readers the following extract:—"As nestling Sparrow-Hawks are inclined to scramble out of their basket, and wander away *before* they can at all fly, there is considerable danger of some of them being lost in long grass or destroyed by cats or weasels, both of which animals we have known to carry them off whilst young and helpless.

Under these circumstances most falconers prefer bringing them up in a large empty room, until they can fly well. If, however, allowed to fly 'at hack' they very soon learn to prey for themselves, and should be taken up directly they begin to absent themselves at the accustomed hour; for this purpose we have always used the low net. Some years ago one of the authors had *nine* of these little Hawks flying at hack at once, all of which came at the whistle to feed on his arm, but were at the same time very shy of strangers. They require to be very highly fed while at liberty together, as the first feeling of hunger will cause the most deadly attacks upon each other, which generally end in the weaker ones becoming the food of their brothers and sisters. When taken up, this Hawk should be treated in exactly the same manner as the Goshawk, viz. carried as much as possible, never hooded, except while travelling, and placed upon the bow perch; it will not, however, bear the same amount of fasting, but on the contrary requires to be highly fed.

"When first placed upon the fist, the Sparrow-Hawk displays an amazing amount of obstinacy, and will even appear to have lost all power in its legs, so much so as to induce any one unaccustomed to its habits to imagine that it has received some injury. The only mode of overcoming this disposition is to continue to replace it gently on the fist as often as it falls off, and to outdo it in resolution. The Sparrow-Hawk is mentioned by the poet Chaucer, in his 'Assembly of Birds,' as being a favourite at that period for the purpose of taking Quails. As we mentioned in the 'Introduction,' the Wallachian gipsies about Bucharest, before the war with Russia, paid a tribute to the Porte in Quails, which birds were taken by them in great numbers by means of Sparrow-Hawks; the Hawks were caught in nets, probably whilst migrating, trained for the purpose, and again turned loose as soon as the requisite number of Quails had been secured. When Landrails were more abundant in this country than they are at the present day, the Sparrow-Hawk was used in capturing them; and Sir John Sebright says, that is the best of all Hawks for this particular flight: this we can imagine, because, as the Sparrow-Hawk and Goshawk do not strike down their game, but invariably clutch it, the Landrail would have no opportunity of escaping by running, as it might do after having been knocked down by a Merlin or a Peregrine. This Hawk can also take young Partridges, Pigeons, Waterhens, Blackbirds, Thrushes, and many of the smaller birds. It does not mount to any height, like the Falcon, in pursuit of its game, though it will occasionally take Linnets or other birds which do mount, when it meets with them amongst cover.

"Before proceeding to describe the field-management of this little Hawk, we may mention the performances of some of those we have known, by way of encouraging the young Falconer. About eight or nine years ago two female Sparrow-Hawks were trained by Mr. Newcome, and flown at Blackbirds with great success. Sir John Sebright appears to have employed them for taking Partridges, and mentions having on one occasion taken a wild Partridge with a Sparrow-Hawk of his own training ten days after the bird had been caught in a wood. In 1851 Captain Verner (who had seen this species used by the Sikhs whilst with his regiment in India) caught 150 birds in about three months with a Sparrow-Hawk of his own training. During August and September of 1853 Sir Charles Slingsby, Bart., took forty-seven birds with a female Sparrow-Hawk. We have known the chase of a Blackbird with this Hawk in an enclosed country, about Knaresborough, in Yorkshire, to last for twenty minutes; on one occasion it killed five head, viz.

two Blackbirds, two Thrushes, and a House-Sparrow. In August 1854 the same gentleman took in one day eight small birds with another female Sparrow-Hawk; and this Hawk killed in the space of two months nearly double the number of birds taken by the former one in the same period; but we must remark that after a time it refused taking Blackbirds, and took to killing Sparrows and other small game. . . . .

"Like the Goshawk, it is only when in good humour that it will exert itself at all, and this desirable state is shown by similar signs. It is worse than useless to attempt to work it, excepting when it is in flying-order. It differs from its more powerful relation, however, in being of a very delicate constitution, and particularly liable to die during the first year from fits; it cannot bear hunger or cold, and should always have a few mouthfuls of food given to it early in the morning. It requires an occasional bath, and must be kept in a well-sheltered situation. The bell should always be fastened on to the tail, as this appendage is in continual motion."

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, ♂ *sen.* England (*T. Cooke*). *b*, *c*, ♂. Hampstead, near London, October 6th, 1869, and April 2nd, 1870 (*C. Davy*). *d*. Cookham, Berks, November 10th, 1870 (*J. Ford*). *e*, ♂. Christiania, May 1867 (*R. Collett*). *f*. Hareskov, Sjælland, September 13th, 1870 (*A. Benzon*). *g*. Near Copenhagen, September 16th, 1870 (*A. Benzon*). *h*. Near Stettin, 1860 (*H. E. Dresser*). *i*. Southern Spain (*L. H. Irby*). *j*, *k*, ♂ *ad. et juv.* Havankeuy, Asia Minor, October 20th and 23rd, 1869 (*T. Robson*). *l*, ♂. Guiksu, Turkey, November 2nd, 1869 (*T. Robson*). *m*, ♂. Buyukdere, Turkey, November 11th, 1870 (*T. Robson*). *n*, ♀. Ortakeuy, Turkey, November 28th, 1870 (*T. Robson*).

E Mus. Walden.

a. East Lothian (*W.*) *b*, ♂, *juv.* Hampstead, November 11th, 1869 (*C. Davy*). *c*, ♂. Near Reading, Berks, February 21st, 1868 (*C. Howlett*). *d*, *e*, *f*, ♀. Cookham, Berks, September 8th, 1866, April 20th, 1867, and December 30th, 1868 (*W. Briggs*). *g*, *h*, ♂, ♀. Turkey (*T. Robson*). *i*, ♂, *juv.* Pettin-a-hore, April 4th, 1866 (*T. Robson*). *j*, ♂. Asia Minor (*T. Robson*). *k*. Cashmere, 10,000 feet, July. *l*. Sutlej valley, summer. *m*, *n*. Umballah, January and February 1867 (*Dr. Scott*). *o*, ♂. Umballah, November 1866 (*R. C. Beavan*). *p*, ♂. Mussooree (*Jerdon*). *q*, ♀. Maunbhoom, December 23rd, 1864 (*R. C. Beavan*). *r*, ♀. Kotgurh, June 1866 (*Begbie*, =*A. melaschistus*, Hume). *s*, ♀. Hakodadi, Japan, November 25th, 1864 (*H. Whitely*).

E Mus. A. Basil Brooke.

a, *b*, ♂, ♀. Colebrooke, Brookeborough, Ireland, January 4th, 1872 (*A. B. B.*). *c*, *d*. Colebrooke, January 26th, 1872 (*A. B. B.*).

E Mus. J. H. Gurney, jun.

a, *b*, *c*. Wolsingham, Durham, July 1866, and October 1867 (*J. H. G.*). *d*, ♂. Near Richmond, Yorkshire, January 20th, 1868 (*E. Backhouse*). *e*, *f*, ♂, ♀. Greatham, Durham, November 16th, 1865, and November 24th, 1866 (*J. H. G.*) *g*, nestling. Bridlington, Yorkshire (*Jones*). *h*, nestling. Hertfordshire (*Burton*). *i*. Lower Earlham, Norfolk, February 18th, 1866 (*J. H. G.*). *j*, ♂, *juv.* St. Petersburg, September 6th, 1869 (*J. H. G.*)

E Mus. H. B. Tristram.

a, b. Greatham, Durham, December 10th, 1867, and June 10th, 1868 (*J. H. Gurney*). *c, d.* Wolsingham, July 8th, 1867 (*J. H. G.*). *e,* ♂. Jericho, January 9th, 1864 (*H. B. T.*). *f,* ♀. Wady Bireh, Mount Tabor, April 12th, 1864 (*H. B. T.*). *g,* ♂. Beersheba, February 2nd, 1864 (*H. B. T.*). *h.* Gennesareth, March 9th, 1864 (*H. B. T.*).

E Mus. Huntly.

a, ♀. Aboyne, Aberdeenshire, September 1871 (*H.*).

E Mus. W. Schlüter.

a, b, c, d, e, f. Switzerland.

E Mus. Howard Saunders.

a, b, ♀. Ursern, Switzerland. *c, d, e.* Seville, November 18th, 1867, October 1868, December 27th, 1869 (*Ruiz*). *f, g,* ♀. Sierra Nevada, February and March 1871 (*H. S.*).

E Mus. Salvin and Godman.

a, ♀. Bargate, Surrey, April 1857 (*F. Godman*). *b,* ♂. Orotava, Teneriffe, April 7th, 1871 (*F. Godman*). *c,* ♀ *juv.* Japan (*Mus. Lugd.*).

E Mus. R. Swinhoe.

a. Holland, December (*Mus. Lugd.*). *b,* ♀. Canton (*S. Bligh*). *c,* ♀. Swatow, December 1867 (*R. S.*). *d.* Nankow Pass, September 20th, 1863 (*R. S.*). *e.* Shanghai, November 1868 (*R. S.*).

E Mus. T. E. Buckley.

a, ♀. Macedonia, February 15th, 1867 (*T. E. B.*).



LEVANT SPARROW-HAWK.
ACCIPITER BREVIPES



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(LEVANT SPARROW-HAWK.)

Astur brevipes, Severzow, Bull. Soc. Imp. Nat. Mosc. xxxiii. p. 234, tab. i. ii. iii. (1850).
Accipiter sphenurus, Gurney, Ibis, 1859, p. 390 (*nec* Rüpp.).
Accipiter Gurneyi, Bree, B. of Eur. iv. p. 185 (1863).
Accipiter brevipes, Tristram, Ibis, 1865, p. 260.
Micronisus brevipes, Newton, Ibis, 1865, p. 342.
Micronisus badius, De Filippi, Viagg. in Persia, p. 345 (1865).
Accipiter badius, Alléon, Rev. et Mag. de Zool. 1867, p. 1.

Figuræ notabiles.

Severzow, Bull. Soc. Imp. Nat. Mosc. xxxiii. tab. i. ii. iii. (♂ ad., ♂ juv., and details of structure); Bree, B. of Eur. iv. Append. p. 185 (♂ ♀ ad., ♂ ♀ juv.); Seidensacher, Verh. Zool.-Bot. Gesellsch. 1864, Taf. i. (egg).

♂ *ad.* suprà cinerascens: tectricibus alarum dorso concoloribus: scapularium parte basali albâ celatâ: remigibus brunneis, extus cinerascenti lavatis, præsertim secundariis, intùs dimidio basali pogonii interni albo, versus apicem in cinerascentem vergente, vix cinerascenti transfasciato: caudâ brunneâ, suprà cinerascenti lavatâ, subtùs multò pallidiore, rectricibus omnibus, duabus extimis et mediis exceptis, fasciis quinque saturatè brunneis transfasciatis: genis puriùs cinereis: fronte vix albicante: gulâ albâ, scapis angustè nigris lineatâ, vix lineam medianam distinctam formantibus: corpore reliquo subtùs dilutè sed pulchrè rufo et albo transfasciato, pectore superiore ferè unicolori rufo: ventre imo cum subcaudalibus et subalaribus purè albis, his indistinctè fusco transfasciatis: cruribus albicantibus, parte superiore rufo angustè fasciatâ: rostro corneo: pedibus flavis: iride lætè flavâ.

♀ *ad.* brunnea, vix cinerascenti tincta: loris albicantibus: genis et colli lateribus puriùs brunneis: remigibus nigricanti-brunneis, subtùs ad basin albis versus apicem cinerascentibus nigro conspicuè transfasciatis: caudâ brunneâ, suprà cinerascenti lavatâ, subtùs albicante, fasciis sex conspicuis nigricantibus transfasciatâ, rectricibus duabus centralibus obsoletiùs: subtùs albicans, paullò fulvescens, gulâ longitudinaliter brunneo striatâ, fasciam medianam formante: corpore reliquo subtùs fasciis latis profusis clarè brunneis transvermiculato: abdomine magis albicante, fasciis transversalibus angustioribus: subcaudalibus sparsim transfasciatis: cruribus ubique brunneo transfasciatis: subalaribus rufescenti-brunneo undique transfasciatis: rostro et pedibus ut in mari coloratis: iride flavâ.

♂ *juv.* suprà saturatè brunneus, capite nuchâque pallidè ferrugineo tinctis: plumis dorsalibus cum tectricibus alarum ferrugineo marginatis, uropygii plumis latiùs: scapularibus et secundariis dorsalibus ad basin conspicuè albis: remigibus saturatè nigricanti-brunneis, omnibus ferrugineo apicatis, pogonio interno albido, fulvescente, nigro conspicuè transfasciato: caudâ cinerascente, nigro conspicuè transfasciato, rectricum omnium apicibus et pogonio externo pennarum extimarum ferrugineo tinctis: genis albicantibus, brunneo longitudinaliter lineatis: gulâ albâ, lineâ medianâ conspicuâ brunneâ: pectore albo vix fulvescente, plumarum omnium parte medianâ rufescenti-albâ, versus apicem dilatatâ et maculam

ovalem formante : ventre cum cruribus et subalaribus rufescenti-brunneâ transnotatis : subcaudalibus albis, ferè immaculatis : iride nigricanti-brunneâ.

Adult male in breeding-dress. Above ashy grey, the wing-coverts coloured like the back, but the basal portion of the scapulars white, this, however, being concealed by the rest of the plumage; quills brown, externally washed with grey, the basal portion of the inner web white, gradually shading into grey towards the apex of the feather, the lower part being likewise irregularly barred with dusky; tail dark brown, strongly washed with ash-colour, the two centre and two outermost feathers unbarred, all the rest plainly marked with dark grey cross bars; cheeks, ear-coverts, and sides of the neck clearer grey; throat white, somewhat tinged with greyish on the lower part, the shafts of the feathers indicated by a very narrow greyish line, but no very distinct throat-stripe being apparent; breast delicate salmon-colour, barred with white, the latter being most obscure on the upper part of the chest, which is almost entirely uniform rufous; thighs whitish, with indistinct rufous cross bars, especially towards the summit of the tibia; lower part of the abdomen and under tail-coverts white; under wing-coverts whitish, irregularly barred across with pale rufous lines; bill horn-blue; feet yellow; iris deep yellow. Total length 13·3 inches, culmen 0·85, wing 8·9, tail 7, tarsus 2·15, middle toe, without the nail, 1·2.

Adult female. Above brown, the white bases to the scapulars and innermost secondaries well concealed; lores whitish; cheeks, ear-coverts, and sides of the neck clearer brown; wing-coverts coloured like the back, with the least tinge of grey; quills blackish brown, the inner webs white at the base, a little tinged with fulvous, and shading into grey towards the tip, all the feathers distinctly barred with blackish; tail brownish, tinged with grey above, much paler and almost whitish underneath, all the feathers conspicuously banded with six transverse bars of blackish, the two centre and two outer feathers less plainly barred; throat whitish, the shafts broadly indicated by lines of brown, so that a broad median line is marked out; rest of the under surface of the body whitish, very thickly barred across with rufous brown, these bars becoming more narrow towards the abdomen and under tail-coverts, where they are narrower and further apart; the thighs more thickly banded than the abdomen; under wing-coverts thickly covered with rufous-brown bars; bill horn-blue; feet yellow; iris deep amber-yellow. Total length 15·5 inches, culmen 0·95, wing 9·2, tail 7, tarsus 2·3, middle toe, without the nail, 1·3.

Young male. Above dark brown, with scarcely a tinge of grey, but all the feathers edged with rufous, paler on the rump, the head and nape being especially tinged with this colour; wing-coverts coloured and edged like the back; quills blackish brown, all tipped with rufous, the base of the inner web white, these white bases on the innermost secondaries and scapularies being very distinct when the feathers are moved, the inner web on its under surface slightly tinged with buff, and barred across with black; tail greyish above, much paler beneath, barred across with black, more obscurely on the two centre and two outside feathers, the latter edged, and all the feathers tipped with rufous; throat white, with a very distinct median line, caused by the dark shafts to the feathers; breast white, slightly tinged with buff, and everywhere distinctly marked with rufous-brown oval spots, which are formed by a dark shaft-stripe broadening out into a spot towards the extremity of the plume; on the abdomen and thighs these spots take the form of broad zigzag bars, which are much fewer in number on the under tail-coverts, these last being almost pure white; under wing-coverts buffy white, barred across with brown; iris blackish brown. Total length 13 inches, culmen 0·8, wing 8·5, tail 6·8, tarsus 1·9, middle toe, without the nail, 1·2.

Obs. Between the adult male and female scarcely any difference in size exists; but very young males have shorter wings. The latter, though resembling the old female so far as the brown

plumage is concerned, differ very conspicuously as regards the spotted breast. The specimen above described seems to be quite young, having been shot by Dr. Krüper on the 27th of July 1869. Two birds of the same sex, obtained by Mr. Robson on the 22nd of September, are very similar, but appear to be more thickly spotted, and have the breast-markings more clearly ferruginous; while another Beyrout specimen in the Norwich Museum (undated) differs in having more rufous thighs, more distinct markings on the under tail-coverts, and has the wing tinged with grey. The adult plumage is assumed in the following spring, but is not complete by the beginning of May, as a specimen in Canon Tristram's collection, killed on the third of that month, shows us. This bird has remains of the spotted plumage intermingled with the delicate rufous cross-barring which forms the characteristic of the adult male, while several grey feathers are to be seen on the nape and back. Two other specimens in the Norwich Museum exhibit precisely the same peculiarities; and, judging from these examples, it would appear that the full plumage is assumed by a direct moult. In the young males also the cross-barring on the tail is very plain, but is decidedly more obscure in the adult birds.

The range of the present bird seems to extend from Central Russia to Syria, occurring in Greece, Turkey, Asia Minor, Palestine, and perhaps Persia; for we coincide in the belief expressed by Drs. Finsch and Hartlaub that the bird recorded by De Filippi from the latter country, under the name of *Micronisus badius*, is most probably the present species. Although we by no means agree in the mersion of so many species under the heading of *N. badius* by the last-named authors in their celebrated work on the Birds of Eastern Africa, we fully indorse their opinion as to the specific distinctness of the present bird, which, by its large size, differs from all its congeners.

It was first discovered by M. Severzow in the province of Woronetz, where it breeds; but according to this author it does not extend into the province of Moscow.

Messrs. Elwes and Buckley, in their paper on the Birds of Turkey, state:—

"We have no doubt that this Sparrow-Hawk, and probably another species which we are not yet able to identify, are not uncommon in the east of Turkey; and the present species has been killed, both by Mr. Robson and M. Alléon (Rev. Zool. 1867, p. 3), near Constantinople. In Mr. Robson's collection are two small Hawks which certainly appeared to belong to another species, possibly *Accipiter gabar*; but we cannot be sure of this." M. Alléon has given (*l. c.*) a description of an adult male killed by him at Demisdji, on the 16th of September 1865, out of a considerable flock of Sparrow-Hawks and Buzzards. This place is situated on the European shore of the Black Sea, about eight kilometres from the entrance to the Bosphorus. Dr. Krüper has obtained it in Asia Minor, particularly near Smyrna, from the neighbourhood of which place it has also been procured by Mr. Gonzenbach, and forwarded by the latter collector to England. It breeds in Greece, as will be seen by the excellent account of its nesting-habits given below by Dr. Krüper, and forwarded to us for the purposes of the present work by his friend Mr. Schlüter, of Halle; the Norwich Museum also has a specimen from Athens. Mr. Lauretta has sent a fine series of the present species from Beyrout, in Syria; and Canon Tristram has himself collected it in Palestine. He writes:—"I cannot say whether this pretty little Sparrow-Hawk is a migrant; but we certainly never obtained it until April. Still it may have often escaped our notice, and been taken for the common Sparrow-Hawk in winter, especially near Jericho. The few we

identified or shot seemed more stealthy in their movements than their congeners, flying up water-courses under the bushes, betaking themselves to thickets, and remaining under cover of the brushwood."

The following account of its habits accompanied M. Severzow's original description of the present species:—

"This bird is not very common with us; I have only observed it in 1849, on the 17th of April, the 4th of May, and the 10th of August, excepting several occasions when I saw it on the wing, its long wings rendering it easily recognizable. It is by no means shy, and may be easily approached at all ages. It inhabits dry woods, and does not wander; for a male killed in April had the plumage quite fresh, a fact I have not observed with migratory birds. In autumn it draws near habitations. The female lays towards the end of May three eggs (a fourth she had far advanced in the ovary); and the young leave the nest in the early days of August; even when flown they still cry, to call their parents. The male appears to have the same manners as the female, while in *A. nisus* the contrary is the case. When opened I found in the old birds the remains of small birds and locusts, in the young those of orthopterous insects. I have only found this Hawk in the government of Voronège, never in that of Moscow. It seems not to go so far north as *A. nisus*; but I can give no idea of the extent of its range." This account was written in 1850, since which time the species has been found in more southern countries, so that we think there is but little doubt that it really does migrate regularly, though M. Severzow then thought otherwise.

Mr. W. Schlüter, of Halle (Zool. Garten, 1869, p. 374), was one of the first to record its breeding in Europe. He there states that Mr. Hodek, when on an excursion to the Lower Danube in the spring of 1869, found on the 13th of May a nest of this Sparrow-Hawk near the river Timok, which forms the boundary between Servia and Bulgaria. It was placed on the edge of an oak-grove near Púonica, in the Srbinsképlanin mountains. The nest was on the north-eastern slope, situated about fifty feet from the edge of the wood, on a rather bushy oak not above a foot in diameter, and was placed in a slight fork of the main stem about two thirds up the height of the tree. It was about the size of a Sparrow-Hawk's nest, constructed chiefly of slight dry twigs, garnished only on the edge with fresh oak-leaves and twigs, and was probably a nest of the year constructed by the bird itself. It contained two eggs, slightly incubated, which had probably been laid from six to eight days previously. Mr. Hodek shot the female bird as she left the nest, but could not succeed in procuring the male. The two eggs out of this nest are now in the collection of Dr. E. Rey, of Halle a. S.

The following is Dr. Krüper's account of the breeding of *Accipiter brevipes*, for which we are also indebted to M. Schlüter:—"I wrote about the occurrence of this Hawk in Asia Minor in 1864, but I am sorry to say that some time elapsed before these notes on the birds of Smyrna came into print; they were, however, sent to Dr. Cabanis before my last journey was undertaken, but only appeared in the 'Journal für Ornithologie' for 1869 (p. 21). Had they been published earlier (for they were ready for the press late in 1864) this Hawk would certainly have been included in the 'Catalogue des Oiseaux d'Europe,' published by Degland and Gerbe in 1867, as many birds are included in that catalogue which are only stragglers to Europe. In the above notes I stated that the spring migration of these Hawks at Smyrna was large, and that, further,

the autumn migration, which consisted chiefly of young birds, was not small in Attica, but that it was unknown in what part of Europe they bred, no instance of its breeding in Greece having been recorded. When on my entomological excursion to Rentzicki, I saw and heard the first of these Hawks late in April last year; they flew over a large and beautiful garden, filled with old trees, and surrounded by a high wall, belonging to a wealthy Englishman at Salonica. A few days later I saw two, already paired, in another neglected garden, and on the 25th of May I shot in the forest of Langada an old male. I did not succeed in finding a nest last year, but I shot several newly fledged young in July, and found under a nest in a large oak near Rentzicki a dead bird. This year I was fortunate enough to find nests and eggs. On the 24th of May I went to the nest near Rentzicki referred to above. A stone thrown by my companion made the old bird fly off, and we then procured four fresh eggs. After taking an egg of the Spotted Eagle we proceeded to the other deserted garden where last year I obtained the young birds. Here, after looking round for some time, we perceived a small nest on the outer branches of a huge lime-tree, and on throwing a stone at it the Hawk flew off. Before climbing the tree we found at the foot of it the shell of a lately destroyed egg. This newly constructed nest was the smallest I ever saw, and contained one egg quite fresh. In the middle of the tree I found the last year's habitation.

"On Olympus I had not observed any of these Hawks during the spring; and as I was lame I could not undertake any long excursions. About the end of May, however, I saw a pair near Litochoron, which flew to the high oaks in the churchyard of St. George, but did not seem to be breeding there. On the 6th of June I sent my man to the church of St. John, about an hour (four miles English) distant, whence he brought back four eggs of this species. Later on we found it breeding at several places, so that I was enabled to send twenty-one eggs to Mr. Schlüter. Beyond the four eggs I procured at Smyrna in 1863, no other eggs of this bird were known until last year, when two eggs were found by Mr. Hodek in Servia, respecting which Mr. Schlüter wrote in the 'Zoologischer Garten,' and Mr. Hodek himself gave particulars at the meeting of the K. K. Zool. Botanischen Gesellschaft of Vienna on the 7th July, 1869. Judging from what my friend remarked, and from my own observation, I am convinced that all the short-legged Sparrow-Hawks, which pass Smyrna in flocks, breed in Europe. It is uncertain how far it goes into Russia; but in Turkey it is said not to be rare. It is easily distinguishable from the Common Sparrow-Hawk by its call-note, which is a loud *Ke wéker*, *wéker*, *wéker*, and is uttered both on the wing and when sitting, and sounds as if some one were calling 'geh' weg, geh' weg' (go away, go away). The nest is sometimes placed high, sometimes low; and generally an old one is made use of. The eggs are four, sometimes three, in number; and the size differs according to the age and strength of the female; occasionally, also, the form of the egg is elongated, and not round. As regards the dirty colour of some of the eggs, I observed that those freshly laid were generally purer in colour, and the incubated ones more dirty; still I have found incubated ones rather clean, and fresh ones dirty-coloured, and therefore consider that the coloration of the eggs depends more on the cleanliness of the female than on the condition of the interior of the nest.

"On the 10th June my servant found a most peculiar sitting of this Hawk's egg, viz. three eggs quite different in size. The first was very large, indeed almost a double-yelked one, the

second was of the usual size, and the third was a very small one. As the nest was placed very far from the trunk of the tree, the eggs had to be got out with a sort of landing-net, and the small egg fell and was injured. I have kept these three eggs as curiosities. If the eggs of this Hawk are taken when quite fresh, others are immediately deposited, as is the case with the Common Sparrow-Hawk. If, however, the eggs are much incubated, and the season advanced, as was the case this year, they seldom lay again. This year only two pairs, that I know of, laid a second time, though I am convinced that this Hawk sometimes lays a third time if the second sitting is taken immediately."

In Dresser's collection are three eggs of this bird, taken by Dr. Krüper at Olympus on the 12th of June 1870. In size they measure $1\frac{2}{40}\frac{3}{40}$ inch by $1\frac{1}{40}\frac{0}{40}$ inch, and in colour are pale yellowish-white, almost the colour of old ivory, but appear to have contracted the yellow tinge from nest-stains. Compared with eggs of *Accipiter badius* from North-west India they are easily distinguishable, as the latter eggs, although about similar in size, are of a pure bluish-white colour, and have a rather rough grain, like a Marsh-Harrier's egg, whereas those of *Accipiter brevipes* have a rather smooth shiny surface.

Dr. E. Rey, of Rathmannsdorf, near Halle, who is the fortunate possessor of the first eggs of this Hawk taken on European soil, at Puonica, in Servia, on the 13th of May 1869, writes us that of these and other specimens procured by Dr. Th. Krüper, in Macedonia, nineteen eggs in all, the average size, in millimetres, is 39·8 by 31·4, the largest measuring 43·5 by 32·5, and the smallest 37 by 30.

We have said very little on the subject of the supposed identity of this species with *Accipiter badius* and *A. sphenurus*, with both of which it has been erroneously united. Great confusion exists as to the different species of small Sparrow-Hawks of the present group; but it is, in our opinion, a mistake to refer them all to one species, as Drs. Finsch and Hartlaub have done, or to consider them *varieties* of one common form, as Dr. Bree has proposed. To unite every variation in form under one head in a great measure renders null and void any attempt at a correct appreciation of the geographical distribution of birds. We have examined, thanks to the kindness of many good friends, a fine series of all the species which have been merged by authors under the heading of *Accipiter badius*, and we believe that there are at least five different species, each possessing a clearly characterized geographical range, as follows:—

1. *Accipiter badius*, with the female conspicuously larger than the male. *Hab.* India.

2. *A. brevipes*. Largest; sexes very little differing in size. Female resembling that of *A. nisus*. *Hab.* Central Russia southwards to Syria.

3. *A. sphenurus*, with which *A. brachydactylus* is identical. Very similar to *A. badius*, but not exhibiting so much difference in the proportions of the sexes: the female never so large as in true *A. badius*. *Hab.* Senegal to North-east Africa.

4. *A. polyzonoides*. Smallest: never so rufous as the others. *Hab.* Damaraland to Zambesi.

5. *A. madagascariensis*. *Hab.* Madagascar and the Comoro Islands.

The adult and young males figured in our first Plate of this species are taken from Macedonian specimens in our collection received from Dr. Krüper. The second Plate represents an adult female and a young male in change, the former being in the Norwich Museum, and kindly lent to us by the authorities, the latter killed by Canon Tristram, in Palestine, and still in his collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂ *ad.* Macedonia, July 14th, 1869 (*Th. Krüper*). *b.* ♂ *juv.* Macedonia, July 27th, 1869 (*Th. Krüper*).

E Mus. Norvicensi.

a, b, c. Beyrout (*Laurella*). *d.* Smyrna (*Gonzenbach*). *e, f.* Syria (*Verreaux*).

E Mus. H. B. Tristram.

a. ♂. Banias, Palestine, May 3rd, 1864 (*H. B. T.*). *b.* Haravkoi, Asia Minor, September 22nd, 1864 (*T. Robson*).

E Mus. Howard Saunders.

a. Guiken, Asia Minor, September 22nd, 1865 (*T. Robson*).

Genus MILVUS.

Accipiter apud Brisson, Orn. i. p. 414 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 126 (1766).
Milvus, Cuvier, Leç. Anat. Comp. i. tabl. 2 (1800).
Hydroictinia apud Kaup, Classif. Säugeth. & Vög. p. 115 (1844).

This genus is essentially an Old-World one, as the six species which constitute it inhabit the Palæarctic, Ethiopian, Oriental, and Australian Regions, three of these species being found in the Western Palæarctic Region.

The Kites frequent groves and well-wooded localities, especially in the vicinity of rivers; and where not molested they are partial to inhabited places. Their flight is buoyant and gliding; and they may often be seen soaring in circles at considerable altitudes. They feed on small mammals, reptiles, insects, less frequently on small birds; and they are by no means averse to carrion of various kinds, some species being, in hot climates, most useful as scavengers. They place their nests on a high tree or in a cliff, and construct them of sticks interwoven with a variety of old materials, lining them with rags and any soft material they can find. The eggs, from three to four in number, are bluish white, more or less marked with pale purplish grey and dark red or reddish brown.

Milvus ictinus, the type of the genus, has the bill straight at the base and decurved from the cere to the point, the cutting-margin of the upper mandible slightly festooned; nostrils oval, oblique; wings long, reaching nearly to the end of the tail, the first quill rather longer than the seventh, the third longest; tail long, forked; legs short, the tarsus feathered on the upper and scaled on the lower part; toes short, strong, the outer toe slightly reversible; claws moderately strong, curved, acute.



J. G. Keulemans del

Mintern Bros imp

COMMON KITE.
MILVUS ICTINUS

MILVUS ICTINUS.

(COMMON KITE.)

Accipiter milvus regalis, Brisson, Orn. i. p. 414, pl. 33 (1760).
Falco milvus, Linn. Syst. Nat. i. p. 126 (1766).
Milan royal, Buff. Hist. Nat. Ois. i. p. 199 (1770).
?*Milvus castaneus*, Daud. Traité d'Orn. ii. p. 148 (1800).
Milvus ictinus, Savigny, Syst. Ois. d'Egypte, p. 28 (1810).
Accipiter regalis, Pall. Zoogr. Rosso-As. i. p. 356 (1811).
Milvus regalis (Pall.), Vieill. Faun. Franç. p. 14 (1821).
Milvus vulgaris, Flem. Brit. Anim. p. 51 (1828).
Milvus ruber, C. L. Brehm, Vög. Deutschl. p. 50 (1831).

Kite, *Glead*, *Puttock*, *Crotched-tailed Puddock*, English; *Clamhan-gobhlach*, *Croman-lochaidh*, Gaelic; *Milan royal*, French; *Milhafre*, *Milano*, Portuguese; *Milano real*, Spanish; *Nibbio reale*, Italian; *Falcun*, Maltese; *Hadayia hamara*, Arabic; *Siwâna*, Moorish; *rothe Milan*, *Gabelweihe*, German; *Wouw*, Dutch; *Glente*, *röd Glente*, Danish; *Glente*, Norwegian; *Glada*, Swedish; *Korshun canya*, Russian.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 26; Kjærb. Orn. Dan. taf. iv.; Fritsch, Vög. Eur. taf. 6. fig. 7; Naumann, Vög. Deutschl. taf. 31. fig. 1; Sundevall, Sv. Fogl. pl. xxix. fig. 4; Gould, B. of Eur. pl. 28; id. B. of G. Brit. i. pl. xxii.; Roux, Orn. Prov. pls. 26, 27; Susemihl, Vög. Eur. taf. 30. fig. 1.

♂ *ad.* capite et collo albis nigro-fusco striatis: dorso sordidè fusco, plumis omnibus albido vel ferrugineo marginatis: remigibus primariis nigricantibus, in pogonio interno ad basin albis, secundariis nigricantibus, internis pallidioribus et vix rufescente brunneo lavatis: alis subtùs pallidioribus, obscurè fasciatis: caudâ forficatâ, ferrugineâ, albido apicatâ, rectricibus extimis versus apicem brunneis, extimâ utrinque in pogonio externo brunneâ: corpore subtùs ferrugineo, pectore conspicuè et abdomine vix fusco striatis: cerâ et pedibus flavis: rostro nigricanti-corneo, ad basin cæruleo: unguibus nigricantibus: iride flavicanti-albidâ.

♀ mari similis sed paullo major et pallidior, capite vix ferrugineo lavato, caudâ pallidiore.

Juv. adulto similis sed corpore suprà magis ferrugineo notato, pileo fusco vix albido notato, caudâ brunnescentiore et fusco notatâ vel indistinctè fasciatâ et minus forficatâ: corpore subtùs pallidè ferrugineo, conspicuè pallidè flavicante ochraceo maculato, abdomine imo et subcaudalibus flavicanti-albidis.

Adult Male (near Stettin). Head and neck white, broadly striped with black, the centres of the feathers along the shaft being of this latter colour; back and scapulars dark earth-brown, with dull whitish edgings to the feathers, those on the fore part of the back being edged with pale rusty red; primary

quills black, except on the basal portion of the inner web above the emargination, where they are white; one or two of the inner primaries slightly washed with greyish brown; secondaries blackish, the inner ones lighter, and slightly tinged with rufous brown; on the under surface of the wing the secondaries are whitish brown, with faint bars; larger wing-coverts blackish brown, the median and smaller coverts dark earth-brown, with dull white and rufous edgings; tail and upper tail-coverts rusty red, the feathers having black shafts, the central rectrices lighter, and the outer ones washed with brown towards the tip, almost all having creamy white tips; the outermost feather with the outer web dark brown, and the inner web marked with a few faint bars; lower throat, breast, and underparts rusty red, becoming rich red towards the crissum, and striped more broadly on the breast and only narrowly on the abdomen with blackish brown; under tail-coverts rather paler rusty red; bill bluish horn, becoming black towards the tip; cere and legs yellow; claws black; iris silvery white, with a yellowish tinge. Total length about 25 inches, culmen 1·9, wing 19·0, tail 14·4, the central rectrices nearly 4 inches shorter than the outer ones, tarsus 2·3.

Female. Differs from the male merely in being somewhat larger in size, the head being slightly washed with rufous, the tail lighter, and in general the colours rather paler than in the male.

Young (Southern Spain). Differs from the adult in having the crown blackish brown, marked with white, the upper parts more marked with rufous, tail browner, and marked with spots or indistinct bars of dark brown; throat white, as in the adult, but more narrowly striped with blackish; underparts pale rusty red, all the feathers marked with large yellowish blotches or spots; lower abdomen and under tail-coverts yellowish white.

The common Kite is found exclusively in the Western Palæarctic Region, being spread over Central and Northern, and to some extent in Southern Europe during the breeding-season; and in the winter it is met with in Southern Europe and Northern Africa.

In Great Britain, although it used formerly to be quite common, it has now become almost extinct. Professor Newton says (Yarr. Brit. Birds, i. p. 94) that "formerly it abounded throughout the country and even in London, where it seems there was a regulation for its protection, so as to have been an object of astonishment to foreigners. Thus the Bohemian Schaschek, who visited England about 1461, after mentioning London Bridge in his journal, remarks that he had nowhere seen so great a number of Kites as there; and the statement is confirmed by Belon, who says that they were scarcely more numerous in Cairo than in London, where they remained all the year, feeding on the garbage of the streets and even of the Thames itself." With regard to its present breeding-haunts, he says that "in the southern counties of England there seems to be no place now where it habitually breeds. There were nests in Lincolnshire until the year 1857; but, owing in a great measure to the cutting down of the woods, it has probably been driven from that locality. In the 'Zoologist' for 1871 (p. 2519), Mr. Newman mentions that two nests were found in Radnorshire in 1870; so it is to be hoped that the species may still linger in Wales until happier times await it. When the first edition of this work (Yarrell's Brit. Birds) was published, the woods near Alconbury Hill were still the breeding-places of the Kite; but it was extirpated there about the year 1844, or soon after." In Scotland it has also become almost extinct, and it only nests in some of the most secluded districts. Mr. R. Gray writes (B. of W. of Scotl. p. 42) as follows:—"Generally speaking, its best-known haunts in the west of Scotland have been, during the last ten years, almost entirely deserted; and the bird is now

indeed but rarely seen, even as a straggler, in localities where in 1856, 1857, 1858 it remained to breed. I find from my note-books that three pairs nested in Argyleshire in 1858. One of these pairs had frequented the neighbourhood of Bonaw for some years; but I have not of late been able to trace satisfactorily the existence of the species in that district, which is unfortunately too much in the way of egg-collecting tourists. Two years previously one or two nests were also obtained in Dumbartonshire; an egg in my collection was taken from a nest in Kenmore Wood, on the banks of Loch Lomond. In almost every Scottish collection of any consequence I find more than one specimen of the Kite—a fact which shows the species to have been widely spread. Some of the specimens I have examined are extremely handsome, especially those procured in the counties of Argyle and Inverness, where their prey for the most part must have been lawfully obtained, without the indulgence of plundering raids among poultry. I have been unable to trace its presence in any part of the Outer Hebrides; but I find that the late Dr. Macgillivray, in a communication to the Edinburgh 'Journal of Natural and Geographical Science,' entitled 'An Account of the Outer Hebrides,' and published in 1830, remarks that the Kite is very rare in these islands. Mr. Elwes informs me that in Islay it is still seen, but rarely, flying over the island." According to Thompson it is only known as a rare visitant to Ireland; and, as Professor Newton remarks, Mr. Walters omits all mention of it.

It does not occur in Greenland or Iceland; but in Scandinavia it is common in the southern districts, becoming rare towards the north. Mr. Robert Collett says that it breeds but rarely in Norway, and only in the south-eastern portion, in Smaalehnene, especially near Frederikstad and Frederikshald. In the spring and autumn it appears in limited numbers in the lower portion of Southern Norway, and is often seen near Christiania, especially in spring. Northward it has been observed as far as the Gudbrandsdale, where one was shot in 1834; and Dr. Printz observed it at Land in 1849. It has also on several occasions been seen in Nedenæs and near Stavanger. In Sweden it is, according to Professor Sundevall, found breeding to 60° N. lat., or a little further north, nearly in 61°, at Gefle, arriving in March and leaving in October; and Nilsson says that it is common throughout the summer in Southern and Central Sweden, and that occasionally a straggler remains in Skåne over winter. It arrives in Southern Sweden from the 20th to the 25th March, sometimes even earlier; and its arrival is generally a sure sign that winter has passed. It has not been recorded from Finland; but Von Wright says that he has been told that it occurs near Wyburg. During the year I spent in that town I never saw or heard of it as having occurred there. In Russia it certainly occurs as far north as Archangel, where my collector informs me it is not rare. Mr. Sabanäeff says that, according to Daniloff, it breeds in the south-eastern portion of the Government of Orloff; and Severtzoff says that it nests in the Voronege Government. Bogdanoff considers that the Don is about the eastern boundary of its range; but Sabanäeff himself met with it near Ekaterinburg; and in his MS. notes on the avifauna of the Ural he states that he is sure he saw it in the Kaslinsky Ural. In Northern Germany it occurs here and there during the breeding-season, and appears to nest more commonly in Pomerania than elsewhere. Mr. A. von Homeyer says that, according to Colonel von Zittwitz, one sometimes finds them breeding so close together that two or three nests may be seen from one place.

In Denmark, Mr. Benzon informs me, it is found throughout the country, and is common

at Laaland and Falster, in Southern Seeland, and in Central Jutland, but is far from being as numerous as the Buzzard. He knows no instance of its having been known to winter there; for it is a true migrant, arriving in March, or else in very mild seasons late in February, and leaving again in October. Mr. C. Sachse informs me that in the vicinity of Altenkirchen, in Rhenish Prussia, the Kite arrives late in February and leaves, in companies of twenty to fifty individuals, in October or November. This spring (1875) he says he saw three individuals for the first time on the 3rd March, during heavy snow and severe frost.

In Hollaud it only occurs during passage. Mr. van Wickevoort Crommelin informs me that it is a rare visitant during the spring passage in April, and that he once observed it in August on the coast; and Mr. H. M. Labouchere writes that hitherto it has only been observed in the Provinces of North Brabant, Guelderland, and Groningen. In Belgium it also occurs during passage, the periods of its migration coinciding with those of the Woodcock. It is, however, said to breed in Luxemburg. In the wooded portions of France it is resident, and is found more especially in the departments of the Landes, and in some districts of the Pyrenees; it also occurs in less abundance in Provence and Champagne, and on passage in the lower Languedoc and near Lille.

It occurs in Portugal, and is, Professor Barboza du Bocage says, common at Alemtejo. Dr. Rey also says that he observed it in Estremadura and at Algarve. In Spain it is a common and resident species throughout the peninsula; and I saw many during the early spring and in the breeding-season in the different parts of Spain I visited. Colonel Irby, however, says that in the vicinity of Gibraltar it seldom occurs, except on passage, and is as common in Southern Spain in winter as at any other season. Dr. Brehm states that near Toledo he saw flocks of several hundred individuals collected in the evening like Crows before retiring to roost. Passing eastward, again, we find it occurring in Savoy during passage, being more numerous in some seasons than in others; and Bailly says that a few remain there to breed, and that the nests of this species may usually be found near Bourget, Dent-du-Chat, Méry, and the cliffs above the Rhône and the Isère. In Italy, according to Salvadori, it is common and resident in the central and southern provinces, but rarer in the north, especially in Piedmont. In Sicily it is numerous, and breeds in most of the wooded districts of the interior.

Mr. C. A. Wright says (Ibis, 1864, p. 46) that it is "very rare in Malta and Gozo. It is said by Schembri to breed in Gozo; but I have not been able to obtain any confirmation of this fact." It occurs in Greece, but does not appear ever to remain to breed there. Lord Lilford writes (Ibis, 1860, p. 9) as follows:—"Not common in Epirus. I did not see a single specimen during the first winter that I passed among Greek seas. I noticed a pair several times about Butrinto during the very severe frosts of December 1857 and January 1858, and found the species rather abundant in Acarnania in the last-named and following months. Among the fine oak-forests in the neighbourhood of Tragamesti a pair or two were generally to be seen, soaring in circles at a great elevation, and occasionally swooping down near the tree-tops. The bird-stuffer at Corfu did not recognize this species by its Italian, Greek, or English names, and told me that he had never seen or heard of any Hawk with a forked tail. The Greek shepherds in Acarnania, when we pointed out this species to them, said they had never before noticed it. From these circumstances I think we may infer that this species is a rare and only occasional

visitor to these parts, though it is very common and a constant resident in Sicily and Calabria." Lindermayer says that in October and November it is common in Northern Greece, but he has not known it remain there to breed. Erhard includes it in his list of migrants occuring in the Cyclades; and Dr. Krüper says that, as a rule, it only visits Greece during passage, but a few remain over winter. By about February all have left. In Southern Germany it is not very common; and Dr. Anton Fritsch speaks of it as being rare in Central Bohemia, but common near Neuhaus; and it breeds near Frauenberg. Along the course of the Danube it appears to occur in most of the wooded localities, and is common in Bulgaria, being Mr. Farman says, more numerous during the breeding-season; and Mr. Alléon states that it is not rare on the Bosphorus during winter. Professor von Nordmann speaks of it as being tolerably abundant throughout Southern Russia, and especially numerous in Bessarabia; but Mr. H. Goebel says (J. f. O. 1870, p. 199) that it is a rare species in the Uman district, though common in the oak-groves of Podolia. It is, Dr. Radde writes (J. f. O. 1854, p. 55) common in the Bukovina and Northern Bessarabia, as also near Kishenew, in the Crimea; but he only once saw one near the Alma. It occurs during passage in Asia Minor; but I have no details as to whether it ever breeds there, which it may possibly do, as Canon Tristram found its nest in Palestine, where it is most frequently seen during the winter season. This gentleman writes (Ibis, 1865, p. 255) as follows:—"During winter this is the only Kite to be seen, and very common it is; but towards spring it becomes more scarce, the larger number retiring to the northern mountains for nidification, though a few still remain in the central districts near Carmel and Nablous, and many in the hill-country of Galilee. Yet we took only two well-identified nests. In winter the Kite is gregarious, especially in the south; and is very abundant in the wilderness to the west of the Dead Sea, and in the whole desert and plateaux round Beersheba, where large flocks may be seen hovering at all times of the day, and hanging about the neighbourhood of the Bedouin camps and their cattle. In wet and stormy weather they will gather like Rooks, and sit motionless on a wall or on a clump of trees, in the ruined district of Hebron, for hours together." Its occurrence in North-east Africa is very doubtful; Rüppell says that it is common in Lower Egypt; but neither Brehm nor Von Heuglin met with it there; and Captain Shelley adds that he knows of no instance of its capture in Egypt.

It is, however, found in North-western Africa, where it both remains over winter and breeds. Loche says that it is very common in Algeria; and Mr. O. Salvin, who found it breeding there, writes (Ibis, 1859, p. 183) as follows:—"For the most part we found the nests of the Kite were much dispersed; I have no instance noted of more than a pair occupying one cliff. When in a rock they were usually placed where a small tree or shrub grew out of a crack. Such was the case at Djebel Dekma, Khifan, M'sakta, and Kef Laks, with a single exception. In this case the nest was in a hole in the precipice that forms the western termination of Djebel Dekma. The young in this nest were hatched in the first week in April. About the Ouled Zeid country, north of Souk Harras, the nests were usually in trees. Nearly all the eggs we obtained were remarkably devoid of colouring." Mr. C. F. Tyrwhitt-Drake found it not uncommon at Tetuan in winter; and Colonel Irby writes that, according to Favier, it is "found in the vicinity of Tangier in much smaller numbers than *M. migrans*, being seen on passage only in pairs; the birds which remain to nest appear to be those which are the first to go south; the

remainder cross to Europe in March, returning in October; a few, however, stay throughout the winter." It inhabits the Canaries and Madeira; and Dr. C. Bolle writes (J. f. O. 1857, p. 270) that it is so common at Teneriffe that it may be seen always and everywhere, and even stragglers are to be met with on the Cumbre and in the Cañadas of the Teyde, on the level ground near the Peak. He also observed it on the Llano de Maja, and adds that it is just as common at Gran Canaria and Ferro. Dr. H. Dohrn also met with it at the Cape-Verds, and obtained several specimens in the northern portions of those islands.

In its habits the Kite more resembles the Buzzard than any other of the birds of prey. Though a strong bird on the wing, it is not swift; and I have usually seen it flying, or rather sailing, in circles with outstretched, almost motionless wings, its tail alone being used, like the rudder of a ship, to guide its motions. It flies at a great altitude, often almost out of sight; and I have rarely seen one sitting on a tree, but usually circling about in the open country in search of prey. It is a heavy, rather sluggish bird, ignoble in its habits, and by no means gifted with much courage; indeed a hen will sometimes be a match for it, and able to drive it away from her brood; but as a rule it is a terrible scourage to any poultry-yard near which it may have its habitation, and will create great havoc amongst the young chickens, ducks, and geese. Being too slow on the wing to catch small birds, it feeds entirely on young birds, small mammals, young hares and rabbits, lizards, snakes, frogs, and larger insects, such as maybugs, grasshoppers, &c., which it can procure without much exertion and difficulty. As a rule it is a silent bird, and it is but seldom that its clear note *heah, he, he, heah* is heard; and I have only heard it uttered when on a fine clear day, early in the breeding-season, I have seen this elegant bird circling above the grove where its nest was placed. It is usually seen in the open country, or where groves are studded about in the otherwise open country, either where it is flat or amongst undulating or slightly hilly ground; but out of the breeding-season it seems to affect the open country, even where there is scarcely any wood.

Early in the spring, immediately after its arrival from the south, it selects a place for the purpose of nidification, this latter being usually a large non-evergreen tree either in a dense forest or else in a grove. The nest, which is usually placed near the stem or on a large branch at some altitude from the ground, is large and rather flat in shape, constructed of dried sticks and lined with wool, straws, moss, or any old rags it can pick up. Mr. Robert Gray, describing a nest in Kenmore Wood, on the banks of Loch Lomond, says that "the materials of which it was built would have almost suggested the idea of the birds having robbed some wandering gaberlunzie of the contents of his wardrobe—a pair of ragged trousers, worn stockings, and part of an old shirt (the latter flapping on the tree-top like an old worn banner) being among the articles." Mr. Benzon, writing to me respecting its breeding-habits in Denmark, says:—"It usually places its nest in some large forest-tree at a greater altitude; and the nest is more difficult of access than that of the Buzzard, which it much resembles in general external appearance, being constructed of rough twigs and small boughs; but it is larger and flatter, and the interior lining, besides consisting of grass and grass-roots, is, to a large extent, made up of a mixture of all sorts of odds and ends, newspapers and cloth forming a considerable portion. I saw a nest in Seeland on the 28th April, 1864, which was well lined with newspaper, and from which waved like a white flag a little window-curtain which it had carried off from the window of a

forester, whose wife was very pleased when I took the nest, as the Kite had within a few days stolen three chickens, and she expected now that its nest was robbed it would leave that locality. It lays from the last week in April to the middle of May, and nests rather later in Jutland and on the islands; for I possess several clutches from Thorstedlund, in Jutland, taken on the 21st May. The number of eggs deposited is usually three, seldom four, and in rare cases as many as five. They are bluish white in colour, marked with a few greyish or violet-grey shell-markings, and very sparingly spotted with reddish brown or brown surface-blotches, which in some are wanting, and these are dotted with very small brown dots or a few scratches. Eggs in my collection measure from 55 by 42 to 59 by 46 millims." Mr. Carl Sachse, writing to me from Altenkirchen respecting its breeding-habits, says:—"It returns, if possible, to its old nesting-place year after year; and both birds may be observed circling above the grove at a great altitude in the spring. They nearly always make a new nest; and here I generally find the eggs, from two to three in number, in the latter half of April. The eggs frequently resemble those of the common Buzzard so closely that it is hard to distinguish them; but the nest may invariably be known by being lined with rags, tow, &c. It is rather peculiar that here the nest is almost always placed on a tree which can easily be climbed, often on trees which scarcely measure 30 centimetres in thickness, and not higher than 6 to 8 metres from the ground; almost always the nest is in a fork of the main stem; and hence, from the facility with which it may be reached, the nest is often robbed by the peasant lads. It feeds on mice, moles, lizards, worms, &c., and is very partial to carrion. So soon as the young are hatched it ranges far in search of prey, and frequently visits rivers and pieces of water four or five miles away in search of frogs or fish. The gluttony of the young birds is almost beyond belief, and their parents have hard work to satisfy their cravings; for they require fully three times as much food as the young of *Buteo vulgaris* or *Pernis apivorus*, as I well know from experience, having reared several young Kites. When incubating, the Kite sits very hard; but so soon as the eggs are hatched it is most difficult to approach within range. I remained closely hidden for nearly twelve hours near a nest to shoot the old birds; but they kept far away, circling high above the nest, and dared not approach to feed their young, which were exceedingly hungry. During the breeding-season, however, they are very bold in robbing the peasants of their poultry, and will strike and carry off a chicken even though in the immediate vicinity of people, and in spite of being screamed at loudly. Although the Kite catches fish, yet it does so very clumsily, and more often misses its mark than catches the fish. It will patiently hover over the water; and an hour will sometimes elapse before, after repeated failures, it catches a fish; for it is too slow for this sort of work. As a rule, I have found this species very shy; but when an Owl is used as a decoy, it will frequently come within shot."

To the above details respecting the nidification of the present species I can add but little. I have examined several nests *in sitû*, all of which resembled Buzzards' nests, but were a trifle larger; and the lining was made up of a motley collection of old rags of various sorts, and any odds and ends the bird had picked up. I possess a tolerably large series of eggs from various parts of Germany, and have some also from Thorstedlund, in Jutland. These eggs, though when taken they were bluish white, are now almost pure white, blotched and spotted, but sparingly, with dark red, these markings being small; and the shell-markings, which are pale purplish grey, are very slightly defined. As a rule they may be distinguished from the eggs of

the Buzzard by having a few peculiar scratches of colour and some very small dots scattered over the egg. In size those in my collection vary from $2\frac{5}{40}$ by $1\frac{31}{40}$ to $2\frac{14}{40}$ by $1\frac{32}{40}$ inch.

The specimens figured and described are an adult male and a young bird in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Near Stettin, 1861 (*H. E. D.*). *b*, ♂ *jun.* Southern Spain (*Colonel Irby*).

E Mus. Brit. Reg.

a, *ad.* Great Britain. *b*, ♂ *ad.* Caermarthenshire (*Montagu*). *c*, *ad.* France (*Baron Laugier de Chartrouse*). *d*, ♂ *juv.* Thuringia (*R. B. Sharpe*).



1/3

J.G.Keulemans lith.

M&N.Hanhart imp

BLACK KITE.

MILVUS MIGRANS

MILVUS MIGRANS.

(BLACK KITE.)

Accipiter milvus niger, Briss. Orn. i. p. 413 (1760).
Le Milan noir, Buff. Hist. Nat. Ois. i. p. 203, Pl. Enl. 472 (1770).
? *Austrian Kite*, Lath. Gen. Syn. i. p. 62 (1781).
Falco migrans, Bodd. Tabl. Pl. Enl. p. 28 (1783, ex D'Aubent.).
Falco ater, Gmel. Syst. Nat. i. p. 262 (1788).
? *Falco austriacus*, Gm. tom. cit. p. 262 (1788).
Milvus ater (Gm.), Daudin, Traité d'Orn. ii. p. 149 (1800).
? *Milvus austriacus*, Daud. tom. cit. p. 149 (1800).
Falco fusco-ater, Wolf, in Meyer & Wolf's Taschenb. deutsch. Vogelk. i. p. 27 (1810).
Accipiter milvus, Pall. Zoogr. Rosso-As. i. p. 356 (1811).
Milvus fuscus, C. L. Brehm, Vög. Deutschl. p. 53 (1831).
Milvus niger, Bp. Comp. List, p. 4 (1838).
Hydroictinia, Kaup (*Falco ater*, Gm.), Classif. Säugeth. u. Vög. p. 115 (1844).
Milvus ætolius, Schlegel, Vog. Nederl. p. 46 (1854).
Milvus migrans, Strickl. Orn. Syn. p. 133 (1855).

Milan noir, French; *Milano negro*, Spanish; *Nibbio nero*, Italian; *Astun*, Maltese; *Siwâna*, Moorish; *schwarzbrauner Milan*, German; *zwartbruine Wouw*, Dutch.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 472; Werner, Atlas, *Rapaces*, pl. 27; Fritsch, Vög. Eur. taf. 9. fig. 2; Naumann, Vög. Deutschl. taf. 31. fig. 2; Gould, B. of Eur. pl. 29; id. B. of G. Brit. i. pl. 23; Schlegel, Vog. Nederl. pl. 32; Susemihl, Vög. Eur. taf. 30. fig. 2.

Ad. pileo, capitis lateribus et nuchâ albis nigro-fusco striatis: corpore suprà saturatè fusco, dorso vix metallicè nitente, nuchâ nigro-fusco striatâ: remigibus primariis et secundariis externis nigris, internis saturatè fuscis: tectricibus alarum dorso concoloribus sed pallidiore marginatis: caudâ saturatè fuscâ vix griseo tinctâ et indistinctè fasciatâ: gulâ albidâ nigro-fusco striatâ: pectore brunneo, eodem modo striato: corpore reliquo subtùs saturatè ferrugineo, plumis centraliter fusco striatis, subalaribus ferrugineo et fusco notatis: rostro nigro-corneo, ad basin mandibulæ flavido, cerâ et pedibus pallidè flavis: iride griseâ vix flavido tinctâ.

Juv. corpore suprà sordidè fusco, plumis fere omnibus albido-ochraceo terminatis: pilei et nuchæ plumis ad basin fuscis et in parte apicali albo-ochraceis: gulâ brunneo-albâ, rhachibus plumarum fuscis: corpore subtùs saturatè et sordidè fusco, versus abdomen ferrugineo-fusco, ubique maculis ovatis sordidè flavidis notato: remigibus et rectricibus ut in adulto coloratis, sed caudâ brunneo-albo apicatâ et magis conspicuè fasciatâ.

Adult Male (Seville). Crown, sides of the head, and nape white, the forehead narrowly and the other parts

broadly striped with blackish brown; upper parts dark hair-brown, with a metallic gloss on the back, the feathers on the hind neck with dark central stripes; those of the wing-coverts and a few of the scapulars with lighter edges; primaries black, excepting some of the inner ones, which are deep brown; secondaries blackish brown, the inner ones assimilating in colour to the back; tail like the back, but slightly duller and a trifle grey in tinge and with scarcely perceptible darker bars, being also but slightly forked; throat dull white, striped with blackish brown; breast clove-brown with blackish stripes, rest of the underparts deep ferruginous, each feather with a dark shaft-line; under wing-coverts rufous, varied with deep brown; bill blackish horn, yellowish at the base of the lower mandible; cere pale yellow; iris greyish, with a yellow tinge surrounded by a black line; legs pale yellow; claws black. Total length about 22 inches, culmen 1·6, wing 17·0, tail 11·2, tarsus 2·25.

Female. Resembles the male, but is somewhat larger in size, rather darker, and a trifle more rufous in general coloration.

Nestling in down. Is distinguishable from the nestling of the common Kite, even when quite young, by having the back darker.

Young (Malta, September). Upper parts of a much duller brown than the adult, the feathers tipped with yellowish white, which gives it a very spotted appearance, crown and nape with these terminal spots much larger, so as almost to hide the rest of the feathers; throat brownish white, the feathers with dark shafts; rest of the underparts dull dark brown, becoming dull reddish brown on the abdomen, every feather with the terminal portion, except on the edge, dull honey-colour, which gives the underparts the appearance of being marked with elongated oval spots of this latter colour; quills and tail as in the adult; but the latter is tipped with dull brownish white, and the bars are more conspicuous.

Obs. Mr. Sharpe, in his recently published 'Catalogue of Accipitres' (p. 322), has called the present species *Milvus korschun*, founding this name on Gmelin's description of *Accipiter korschun* (N. Com. Petr. xv. p. 444, 1771); but I cannot find any reasonable ground for believing that the bird described by Gmelin could possibly have been a Black Kite, and, so far as I can judge, Mr. Sharpe is the first person who has referred it to this species. Some years ago I tried, independently, to make out what several very doubtful species described by Gmelin could be; and I find from my note-book that I could not possibly arrive at any decision respecting his *Accipiter korschun*, but thought it was probably a Marsh-Harrier. I now ascertain, in working up the synonymy of the present species, that both J. F. Gmelin (Syst. Nat. i. p. 261) and Pallas (Zoogr. Rosso-As. i. p. 356) insert *Accipiter korschun* as a synonym of the common Kite; and Nilsson, who has gone carefully into this question, puts it (Orn. Suec. i. p. 20) under *Circus æruginosus*, with the following remark:—"ad hunc pertinet, minime ad *F. milvum* ut Lath. vult." Under these circumstances I feel that nothing can be done but to consign back this name to the oblivion whence it has been, perhaps somewhat unnecessarily, brought up.

The Black Kite inhabits Central and Southern Europe, visiting North-east Africa in the winter, but breeding in West Africa, and occurring as far south as the Cape colony. In Asia it occurs about as far as the Lena, and is common in Persia, but does not occur in India, and in Eastern Siberia is replaced by *Milvus melanotis*.

It has only on one occasion been known with certainty to have occurred in Great Britain. Mr. John Hancock says (Ibis, 1867, p. 253) that he obtained an adult male in a fresh state on the 11th May, 1866, which had been taken in a trap a few days previously in the Red-Deer Park at Alnwick. Mr. Gray remarks (B. of W. of Scotl. p. 43) that "in the beginning of the present

century, when Don's 'Fauna of Forfarshire' was published, the Black Kite is recorded by that writer as occurring 'on heaths and low hills' in his district. At that time the common Kite was a well-known and even plentiful species in the county of Forfar, a district of Scotland which, from its great variety of scenery (woods, glens, and mountain-ranges), can still boast of many rare birds; and I have little doubt that Don, from his general intelligence and accuracy, was right in his recognition of a second species."

It has not been recorded from Scandinavia; nor have I ever heard of its occurrence in Finland; but it occurs in Northern Russia, where Mr. Meves met with it at Sermaks, the Bay of Onega, and Archangel; and Mr. Sabanäeff says that it is generally distributed and common throughout Central Russia, except in the Smolensk Government, where it is somewhat rare. He found it generally throughout the Perm Government when exploring in the Ural. In North Germany it is a summer visitant, being found, Borggreve states, in the eastern and central parts, and appears to be wanting elsewhere; but I have seen it in Western Germany, and it is by no means uncommon in the portions of Baden which skirt the Rhine, where I have seen several in the air at the same time; and Von Homeyer points out that Leisler, Borkhausen, Meyer and Wolf, all record it as breeding near Frauenberg a. M. It has not been met with in Denmark proper, so far as I can ascertain; but it occurs annually on Heligoland, and there is a specimen in the Leyden Museum which was obtained in Holland; and De Selys thinks it probable that it occasionally visits Belgium, especially in the Ardennes district, as it occurs and breeds near Metz, and has been observed in Luxembourg. It occurs and occasionally nests in Lorraine, and is found regularly in Champagne, being also common near Bordeaux and the Pyrenean districts; but in Provence and South-eastern France it is rare, though it is an annual visitant to the banks of the Isère. Professor Barboza du Bocage includes it in his list of the birds of Portugal with a query; but it is found in Spain during the summer season, and is quite common in many parts. I saw many not far from Madrid; and Lord Lilford says (Ibis, 1865, p. 177) that it is "common in Andalucia, and nests in the neighbourhood of Seville in church-towers and ruins." Colonel Irby writes (Orn. Str. Gibr. p. 48) as follows:—"They are entirely migratory, the earliest day on which I observed them crossing the Straits being the 5th of March, then in great numbers, other days on which large flights passed being the 26th, 27th, and 28th of that month, some on the 23rd and one on the 29th of April, and six or seven on the 5th of May. The latest date of the return migration was the 9th of October. It is more abundant in the vicinity of Seville and where there are pine-woods; and very few pairs remain to breed about Gibraltar."

Passing eastward, again, I find that, according to Bailly, it breeds in Savoy, about the Lake of Bourget, and Mont Salève, near Geneva. In Italy it is rare, although it has at one time or another been obtained in nearly every province, and there are records of its having nested in Liguria, Romagna, and the eastern Riviera. Doderlein says that it is of very rare occurrence in Sicily, and occurs only in the woods in the interior of the island, and he is uncertain as to whether it is met with in Sardinia; but Mr. A. B. Brooke writes (Ibis, 1873, p. 150) as follows:—"There is one specimen, stuffed, at the Museum at Cagliari, which I was assured positively by Signor Cara had been killed in the island. I myself, however, neither procured nor saw this bird in a state of nature" in Sardinia. Mr. C. A. Wright records it as very rare in Malta and Gozo.

It is found in Southern Germany; but Dr. Anton Fritsch says that it is rarer in Bohemia than the common Kite, though he thinks it probable that it breeds there. The late Mr. E. Seidensacher informed me that it has been obtained in Styria; and it appears to be met with, though rarely, in Austria. Messrs. Danford and Harvie-Brown write, in their article on the ornithology of Transylvania (Ibis, 1875, p. 295):—"Very common in the Mezöség. We saw many near Tóhat, where we found them nesting. Woods being scarce in that district, the tree-building birds are brought into close contact, and on one occasion we found a Black Kite, a Raven, and a Hooded Crow breeding close to each other. In other parts of the country the present species appears to be less common." I met with it in Wallachia, and believe that I saw it in Servia; and Mr. C. Farman, who observed it in Bulgaria, says that it was not uncommon about the Devna lakes and in the Pravidy valley, but he seldom noticed it much higher up the country.

Dr. Krüper says that it is somewhat rare in Greece, and he thinks that it scarcely breeds on the lakes in the north; but he found many nesting in the swampy wood of Langada, about four hours' journey from Thessalonica, and saw as many as twenty pairs circling in the air at the same time. It occurs in Turkey, being abundant about Constantinople, where Alléon and Vian observed immense flocks in August 1868; and Professor von Nordmann records it as being numerous in Southern Russia. It is found in Asia Minor; and Canon Tristram, writing on its occurrence in Palestine, says (Ibis, 1865, p. 256), "No sooner has the Red Kite begun to retire northwards than the Black Kite, never once seen in winter, returns in immense numbers from the south, and, about the beginning of March, scatters itself over the whole country of Palestine, preferring especially the neighbourhood of villages, where it is a welcome and unmolested guest, and certainly does not appear to attack the poultry, among which it may often be seen feeding on garbage. It is not strictly gregarious, though very sociable; and the slaughter of a sheep near the tents will soon attract a large party of Kites, which swoop down, regardless of man and guns, and enjoy a noisy scramble for the refuse, chasing each other in a laughable fashion, and sometimes enabling the wily Raven to steal off with the coveted morsel during their contention." Mr. C. W. Wyatt, who found it in abundance on the highlands of Edom and at Petra, says that be believes it is a spring visitant to the Sinaitic peninsula. In Africa it is widely distributed; but there is considerable discrepancy in the records of its occurrence in Egypt, where, as far as I can judge, it appears to be much less numerous than the Arabian Kite, and does not remain there to breed. Von Heuglin says that he believes it is only a winter visitant in North-east Africa, and that, according to Hartmann, it occurs as far south as the Fundj Mountains. It is certainly found in Abyssinia; for Mr. Blanford writes, it is "extremely common everywhere, both on the highlands and lowlands. As I brought several specimens with me from various localities, I have certainly not mistaken *M. ægyptius* for this bird." In North-western Africa it is common, and remains to breed in some parts. Loche says that it is common along the coast of all three provinces of Algeria, and it breeds in the Atlas range, but does not occur to the south of those mountains. Mr. Taczanowski found it common in winter on Lake Fezzara; and he also met with it in many other parts. Favier says (*fide* Colonel Irby) that it is "seen near Tangier in immense flights, which pass over to Europe in February and March, to return in August and September. Many remain to breed, awaiting the return migration from Europe, when they all disappear for the winter." It has been obtained at

Bissao, and on the Niger; and there is a specimen in the British Museum from Senegal, and one from the Cape-Verd Islands. Mr. Andersson says (B. of Damara L. p. 21) that the present species "appears in Damara and Great Namaqua Land with the first rains or even before," the earliest arrival that he noticed being "on the 24th of August, or about two months before any rain would fall. Usually it arrives in October and November." Mr. E. L. Layard (B. of S. Afr. p. 25) records the occurrence of one specimen in the Cape colony, the bird in question having been received from Mr. David Arnot, of Colesberg, who shot it in a street of that town. He further adds that he has received specimens from the Zambesi, brought down by Mr. J. C. Chapman; and Mr. T. E. Buckley (Ibis, 1874, p. 360) writes of it, "Very common through the Bamangwato and Matabili country; but it is not until the rainy season that they appear in any numbers. We saw an immense quantity one day in November, after a heavy shower of rain, together with a few Buzzards, feeding on the swarms of young locusts which covered the ground." Mr. Edward Newton obtained a specimen on the 8th September, 1862, on the Hivondrona, in Madagascar; and a second one from Pomony, a young bird nearly full-fledged, obtained in November 1863, is in his and his brother's collection.

To the eastward it occurs about as far as the Lena. Mr. Blanford says that it was the only species that he and Major St. John obtained in Persia, where, however, it was not common. He observed it nowhere so abundant as Ménétriés found it in the Talish Mountains, where, he says, there was a pair, at least, about every village. Dr. Severtzoff states that it breeds throughout Turkestan: but it does not appear to occur in India, except as an extremely rare straggler; for there is a specimen from Afghanistan in the Indian Museum.

In its general habits it differs a good deal from the common Kite. On the wing it has a more buoyant appearance, flying with more grace, and it is frequently seen circling at a considerable altitude above its nesting-place. As a rule it is a shyer bird than the common species, but is at the same time more bold in the pursuit of its prey. It feeds on small mammals, such as young hares, field-mice, moles, &c., but appears very partial to frogs and fish, which latter it catches with considerable dexterity when they approach close to the surface of the water; but it is said by many observers never to immerse the body when striking a fish (as the Osprey does), though M. A. de la Fontaine, whose notes on the present species are translated by Professor Newton, speaks of it as immersing itself when plunging down, and, when emerging, shaking the water from its feathers. It feeds on offal and carrion as readily as the common Kite and the Raven. It is a somewhat destructive bird to the young of many of the water-fowl, as well as of the land-birds, and not unfrequently takes toll amongst the poultry in the farmyards; but in so doing it exhibits much more caution than the common Kite.

Its nest, which resembles that of the common Buzzard or of the common Kite, is placed at some altitude on a large tree. I have examined several nests at different times, and have not found any difference between them and those of the other large Raptores. It usually deposits three or four eggs. Of these I possess a fair series from various parts of Europe, which resemble those of the Buzzard and common Kite; but I have never seen any with the peculiar scratchy markings, as if drawn with a pen, that are not unfrequently seen on the eggs of the common Kite; and they appear on the average to run smaller in size than those of either of these two

species. I do not find any character by which they can with certainty be distinguished from the eggs of the Buzzard.

The call-note or cry of the Black Kite is a shrill, whistling call, not easy to reproduce in writing, but which is easily distinguishable to a practised ear from the call-note of the common Kite. I have most frequently heard it in the spring, uttered when the birds were circling high above their nesting-place.

The specimens figured are an adult male from Seville and a young female from Malta, and are the birds above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Stettin, 1861 (*H. E. D.*). *b*, ♂. Seville (*Llanos*). *c*, ♂. Southern Russia, April (*W. Schlüter*). *d*. South-eastern Persia (*W. T. Blanford*).

E Mus. C. A. Wright.

a, ♀ *juv.* Malta market, September 10th, 1872 (*C. A. W.*).

E Mus. E. Schütt.

a, *ad.*, *b*, *pull.* Baden (*E. S.*).

MILVUS ÆGYPTIUS.

(ARABIAN KITE.)

Falco ægyptius, Gmel. Syst. Nat. i. p. 261 (1788).
Falco forskåhlii, Gmel. tom. cit. p. 263 (1788, ex Forsk.).
Le Parasite, Levaill. Ois. d'Afr. i. p. 88, pl. 22 (1799).
Falco parasitus, Daud. Traité d'Orn. ii. p. 150 (1800, ex Levaill.).
Milvus ætolius, Savigny, Syst. d'Ois. d'Egypte, p. 260, pl. 3. fig. 1 (1809).
Milvus parasiticus (Daud.), Less. Traité d'Orn. p. 71 (1831).
Milvus ægyptius (Gmel.), Gray, Cat. Accipitr. p. 44 (1848).
Milvus forskahli (Gmel.), Strickl. Orn. Syn. p. 134 (1855).
Milvus leucorhynchos, C. L. Brehm, Vogelfang, p. 15 (1855).
Hydroictinia parasitica (Gmel.), Kaup, Isis, 1847, p. 117.
Milvus parasitus (Daud.), Bp. Consp. Gen. Av. i. p. 21 (1850).
Milvus ægypius, Bree, B. of Eur. 2nd ed. i. p. 124 (1875).

Figuræ notabiles.

Levaillant, *l. c.*; Savigny, *l. c.*; Schlegel & Susemihl, Vög. Eur. taf. 31; Fritsch, Vög. Eur. taf. 10. fig. 1; Bree, B. of Eur. i. pl. to p. 124.

Milvo migranti similis sed paullo minor, rostro et cerâ flavis, caudâ magis furcatâ facile distinguendus.

Adult Female (Thebes, March 1864). Closely resembling *Milvus migrans* in plumage; but the crown is less grey and more rufous in tinge, and the tail is a trifle more deeply forked; the bill and cere, however, are wax-yellow, this being the only reliable distinctive character. Total length about 22·5 inches, culmen 1·5, wing 16·8, tail 11·5, tarsus 2·25.

Young. Undistinguishable from the young of *Milvus migrans*.

The present species, which is very closely allied to *Milvus migrans*, replaces that species throughout almost the whole of Africa, but is of rare occurrence out of that continent. According to Erhard it is found in the Cyclades in summer; Von der Mühle possessed two shot in Greece in June and August; and Dr. Krüper states that he once saw it in Ionia; but I do not find any authentic instance of its occurrence further west in Europe than in Greece; for although Baron J. W. von Müller (J. f. O. 1856, p. 215) believes it to have been observed once in Provence, he only cites as an authority a statement made by a sportsman. It is found in Asia Minor, though it is very rare there. Dr. Krüper saw one between Turbali and Celat on the 23rd of May; Canon Tristram found it breeding in Palestine, where, however, it is not so common as *Milvus migrans*; Mr. E. W. Wyatt states (Ibis, 1870, p. 11) that it occurs at Wády Gharandel, in Sinai; and in Egypt it is plentiful: Captain Shelley writes

(B. of Egypt, p. 196) that he found it very abundant throughout Egypt and Nubia; "they frequent every village, and indeed any place where there is a chance of their obtaining offal; and at Cairo and Alexandria great numbers may be seen flying over the town or perched upon the housetops. They are very inquisitive, and become bold when in search of food, often following the sportsman for a considerable distance; but I have never observed them capture even a wounded bird, although they will occasionally swoop at them. They begin breeding in March, usually selecting a sont tree near some village for their nest, which appears invariably to contain some pieces of old rag." Von Heuglin met with it on the Arabian coast of the Red Sea, on Dahlak, in the Adel and Somali country, in Abyssinia up to 12,000 feet, and singly to the Upper Abiad; and Mr. Blanford killed one in Abyssinia on the highlands at Lake Ashangi.

In North-western Africa it is generally distributed. According to Dr. Tristram (Ibis, 1859, p. 290), "in the Sahara it takes the place of the Black Kite (*Milvus ater*) of the Atlas, and exactly resembles it in all its habits. I observed the same contrast between its character and that of the Red Kite which exists between the latter and the Black Kite. Sociable, fearless, and inquisitive, it approaches man far more readily than its congener; nor will the report of a gun drive it off for more than a minute or two. It hangs over the Arab camp waiting for offal, and probably counting the poultry stock; and as scraps of burnouses and coloured cloth are scarcer in the desert than in the mountains, it hangs about its nest, which is always in a tree, the cast-off coats of serpents, large scraps of thin bark, and perhaps a Bustard's wing. Its home is certainly the marine-storeshop of the desert." It is not, however, included by Favier as occurring in Tangier, but is found all down the west coast. Mr. Ussher writes (Ibis, 1874, p. 45):—"It is to be found in considerable numbers on the Gold Coast; and very frequently several specimens may be observed in company with the flocks of *Neophron pileatus*, circling together with these high in the air and uttering a shrill pipe or whistle. It is extremely destructive to young birds, especially chickens, and is not unfrequently killed by the hen in the act of carrying off her young." It has also been obtained at Senegambia, Bissao, Old Calabar; and Professor Barboza du Bocage (J. f. O. 1876, p. 311) records it from Quiliengues, Caconda, and Amboca, and adds that, according to Anchieta, it "is the commonest of the birds of prey in Amboca, and is very destructive to poultry, even carrying them off before people; but the natives affirm that it never attacks tame Pigeons." Mr. Campbell informed Mr. Gurney that it is sometimes extremely common at Abbeokuta; and Mr. Andersson sent one from Ondonga, Ovampo Land, where it is said to be very numerous in October and November. According to Mr. E. L. Layard it is rare in the Cape colony. He saw one at the village of Ceres, in the Cold Bokkeveld, in November 1863, has observed it on the east coast as far as Fazy, and received it from Kuruman. Mr. Ayres states that it is numerous in Natal; and Dr. Kirk says that it arrives in the Zambesi valley from the north in August, and leaves again before June, and he also met with it at Zanzibar. Mr. J. H. Gurney informs me that he has reexamined the specimens obtained by Mr. E. Newton in Madagascar (cited by me in the article on *Milvus migrans*), and now thinks that they are referable to the present species, as is also, he believes, the Kite recorded by Andersson from Damara Land as the Black Kite. Pollen records this Kite from Mayotte, and Dickerson from Joanna.

In habits this Kite much resembles *Milvus migrans*, but is far more bold and fearless. Von Heuglin says that it is gregarious, and is found in towns and villages and near camps,

fishermen's huts, on caravan roads, and near water. It is not at all particular as regards its habitat; for it is equally at home on the tower of a mosque, the flat roof of a dwelling-house, on ruins, in palm-groves, and in cemeteries. During the daytime it is frequently seen in market-places, slaughter-houses, in the streets, and in places where rubbish and offal is cast out; and it puts in an appearance with Vultures at carcasses. It feeds on offal of every description, on chickens, rats, bats, reptiles, and beetles, and will pounce down and steal fish from the fishermen's baskets and flesh from the butchers' stalls. Marquis Antinori relates that when in Central Africa he was one day eating a Francolin outside his hut, and that just as he was lifting a leg to his mouth a Kite swooped down and tore it out of his hand, slightly wounding his fore finger and lip in so doing. Mr. Ayres remarks (Ibis, 1859, p. 239):—"These Kites seem to have a very acute sense of smell; for they invariably appear with or before the Vultures to feed on any ox that may have died, and will (when afraid to settle, in consequence of the Ravens or other birds) dart down and tear off pieces of flesh with their talons, and devour them whilst flying, after which they will return and take more in a similar manner."

In Egypt, Von Heuglin says, it breeds from February to May; and the nest, which is rather loosely constructed of dried twigs, was generally found by him on palm trees; but it nests also on mosques and ruins; and Dr. Tristram took two eggs in a cliff near the sources of the Jordan the last week in May. Mr. E. C. Taylor writes (Ibis, 1867, p. 53) that he found it breeding in Egypt in great numbers in February and March, and took many eggs, several of which were quite white without any spots. In one nest he found the dried-up carcasses of two rats, which formed part of its lining.

I am indebted to Mr. Taylor for several eggs of this Kite, which are much like those of the Black Kite, but are a trifle smaller and more sparingly marked.

As this bird so closely resembles *Milvus migrans*, I have deemed best not to figure it.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Thebes, March 1864 (*E. C. Taylor*). *b*, ♂ *juv.* Esneh, Upper Egypt, March 2nd, 1863 (*J. Barrett*).

E Mus. Brit. Reg.

a, *b*, *ad.* Egypt. *c*, *d*, *juv.* Egypt (*Shelley*). *e*, ♂ *ad.* Ankober, February 1842. *f*, *ad.* Angollallah, October 1842 (*Harris*). *g*, ♂ *ad.*, *h*, ♀. Lake Ashangi and Senafé (*W. T. Blanford*). *i*, *ad.* River Niger (*Dr. Baikie*). *k*. South Africa. *l*. Madagascar.

E Mus. Norv.

a, *ad.* Egypt (*Parzudaki*). *b*, ♂ *juv.* Nubia (*Verreaux*). *c*, ♀. Abyssinia (*Verreaux*). *d*, ♂, *e*, ♀. Bissao (*Verreaux*). *f*, *juv.* Damara Land (*Andersson*). *g*, ♂ *ad.* Port Natal (*Ayres*). *h*, ♀ *ad.* Madagascar (*Verreaux*). *i*, ♀. Madagascar (*E. Newton*). *k*. Joanna Islands, Africa (*Dr. Dickerson*). *l*, *m*. River Niger (*Dr. Baikie*).

Genus ELANUS.

Falco apud Desfontaines, Mém. Acad. R. des Sc. 1787, p. 503.
Elanus, Savigny, Syst. Ois. de l'Egypte, &c., p. 37 (1810).
Elanoides apud Vieillot, Encycl. Méthod. iii. p. 1206 (1823).
Buteo apud Vieillot, tom. cit. p. 1120 (1823).

According to Mr. Sharpe five species belong to this genus, which is represented in the southern portions of the Palæarctic Region, the Ethiopian, Oriental, and Australian Regions, the southern portions of the Nearctic Region, and the Neotropical Region, one species only being found in the Western Palæarctic Region.

In general habits these birds are said to resemble the Harrier more than any others of the Raptores; but they are peculiar in being to some extent crepuscular. Their flight is varied; but they do not appear to go far. They frequent well-wooded cultivated districts, and are said to avoid the bare open plains. They feed on small mammals and insects, and but rarely on birds. They nest in trees, building a tolerably large nest of sticks, lined with hair and roots, and lay several yellowish-white eggs blotched with rich red, some being almost as closely marked as eggs of the Kestrel.

Elanus cæruleus, the type of the genus, has the bill rather small, the upper mandible curving from the base, the tip being strongly hooked and pointed; nostrils oval, placed in the anterior part of the cere, and, to some extent, covered by thin soft bristles; wings long and broad, the first quill longer than the fourth, the second or third longest; tail short, nearly even; legs and feet stout, the tarsus feathered in the front to more than half the length; toes stout, claws moderate, curved, acute.



J. G Keulemans del

Mintern Bros. imp

BLACK-WINGED KITE.
ELANUS CŒRULEUS

ELANUS CÆRULEUS.

(BLACK-WINGED KITE.)

La petite Buse criarde, Sonn. Voy. Ind. ii. p. 184 (1782).
Falco cæruleus, Desf. Mém. Acad. R. des Sciences, 1787, p. 503, pl. 15.
Criard Falcon, Lath. Gen. Syn. Suppl. i. p. 38 (1787).
Falco vociferus, Lath. Ind. Orn. i. p. 46 (1790).
Le Blac, Levaill. Ois. d'Afr. i. p. 147, pls. 36, 37 (1799).
Falco melanopterus, Daud. Traité d'Orn. ii. p. 152 (1800).
Falco clamosus, Shaw, Gen. Zool. vii. p. 200 (1809).
Elanus cæsius, Savigny, Syst. Ois. d'Egypte, p. 274 (1809).
Elanus melanopterus (Daud.), Leach, Zool. Misc. p. 5, pl. 122 (1817).
Elanoides cæsius (Savig.), Bonn. et Vieill. Enc. Méth. iii. p. 1206 (1823).
Buteo vociferus (Lath.), Bonn. et Vieill. tom. cit. p. 1220 (1823).
Elanus minor, Bp. Consp. Gen. Av. i. p. 22 (1850).
Elanus cæruleus (Desf.), Strickl. Orn. Syn. p. 137 (1855).

Élanion-blac, French; *schwarzflügliger Gleitaar*, German; *Aisha-hemika*, Moorish.

Figuræ notabiles.

Desfontaines, *l. c.*; Levaillant, *l. c.*; Werner, Atlas, *Rapaces*, Suppl. pl. 1; Fritsch, Vög. Eur. taf. ix. fig. 4; Naumann, Vög. Deutschl. taf. 347; Gould, B. of Eur. pl. 31; Schlegel and Susemihl, Vög. Eur. taf. 32; Bree, B. of Eur. pl. to p. 108.

♂ *ad.* suprà pallidè cærulescenti-cinereus, subtùs albus, pileo et nuchâ pallidioribus: fronte, lineâ superciliari et capitis lateribus albis, regione orbitali et ciliis nigris: remigibus cærulescenti-cinereis, ad basin albis et ad apicem saturatioribus, secundariis pallidioribus et albido apicatis: tectricibus alarum minoribus et medianis nigris, majoribus cinereis: caudâ albicanti-cinereâ, rectricibus centralibus pallidè cinereis: corpore subtùs cum subalaribus, axillaribus et subcaudalibus purè albis: rostro nigricanti-corneo, cerâ flavidâ: iride miniatâ: pedibus flavis, unguibus nigris.

Juv. adulto dissimilis: fronte lineâ superciliari et capitis lateribus flavicanti-albidis brunneo notatis: pileo et dorso cum scapularibus saturatè brunneis albido apicatis et rufescente brunneo notatis: remigibus saturatè cinereis albo apicatis: tectricibus alarum nigro-fuscis fulvido notatis, medianis et majoribus albido apicatis et rufescente brunneo notatis: caudâ sordidè cinereâ albo apicatâ: corpore subtùs albo, gutturis lateribus vix rufescente ochraceo notatis: pectore rufescente brunneo lavato, plumis nonnullis rhachibus brunneis: iride flavicante: rostro nigricanti-corneo: pedibus flavis, unguibus nigris.

Adult Male (Alexandria). Upper parts of the body ashy grey, or dark ashy french grey; crown and nape light ashy; forehead, lores, a line over the eye and the sides of the head white; feathers round the eye and eye-lashes black: quills bluish ashy grey, white at the extreme base, the shafts blackish, and the terminal portion of the feathers darker; secondaries paler, and with light tips; inner secondaries

coloured like the back; lesser and median wing-coverts, and a little patch on the outer edge of the wing black, larger coverts ashy grey; tail ashy white, the two central rectrices pale ashy grey; entire undersurface of the body, under wing-coverts, axillaries, and under tail-coverts pure white; bill blackish horn; cere yellow; iris carmine; legs and feet yellow, claws blackish. Total length about 13 inches, culmen 1·0, wing 11·6, tail 5·5, tarsus 1·45.

Adult Female (Tangier). Agrees closely with the male above described, except that the upper parts are rather clearer-coloured, and it is less in size, measuring—culmen 1·0, wing 10·15, tail 4·7, tarsus 1·45.

Nestling (Potchefstroom, S. Africa). Forehead, sides of the face, and a line over the eye light yellowish white, marked with brown; lores blackish; crown, back, and scapulars dark brown, the central portion of the back and scapulars conspicuously tipped with whitish, marked with reddish brown; quills dark ashy grey, tipped with white; wing-coverts blackish brown, marked here and there with fulvous, the larger and median coverts tipped with whitish and reddish brown; tail dull dark ashy grey, tipped with white; underparts white, slightly marked on the sides of the throat with reddish ochre, and strongly washed with warm reddish brown on the breast, some of the feathers having also dark shafts; iris yellowish; beak blackish horn; feet yellow, claws black.

This elegant little Raptor is an extremely rare visitant to Europe proper, but inhabits Africa from the extreme north to the Cape colony, and occurs eastward in Asia as far as India.

It is stated to have straggled as far north in Europe as Ireland; but I have not had an opportunity of examining the specimen stated to have been shot there, and can therefore only refer to the statement made by Mr. J. F. Dillon, who writes (Ibis, 1872, pp. 470–71) that he possesses one which was shot at Harristown Bay, near Beauparc, by Mr. Horin, of Navan, about ten years previously. According to Naumann (Vög. Deutschl. xiii. p. 135), it is said to have been obtained in Belgium; and there is no doubt of its occurrence on one occasion in Germany, an adult male having been shot near Darmstadt on the 24th November 1828. It has been recorded from France; and M. Degland says (Orn. Eur. i. p. 70) that he saw a specimen which had been killed at Cassel, in the Département du Nord, in May 1830, and sent to M. Duthoit, of Dunkerque; and M. Duseuil, writing to Temminck, says that it appears not unfrequently in the Département de la Côte d'Or in October, in which month M. Crespon killed an adult male near Nîmes. It has certainly occurred in Portugal; for the Rev. A. C. Smith writes (Ibis, 1868, p. 436) that he saw a specimen in the Lisbon Museum which had been obtained in that country. To Spain it comes as a very rare straggler. Mr. Howard Saunders possesses an adult male shot near Seville, in April 1865; and it is mentioned by Seoane as having occurred near Granada. Lord Lilford, who says that he saw Mr. Saunders's specimen in the hands of the bird-stuffer in Seville a few days after it had been shot, adds that he never met with a specimen in any of the museums he visited whilst in Spain, and believes it to be an extremely rare straggler. Malherbe states that it is found in Sicily during passage; but Salvadori expresses his disbelief in this statement. Count von der Mühle says that it visits Greece periodically, and he obtained two specimens in one day late in the month of April; and Erhardt includes it as a migrant; but Lindermayer says that he never met with it whilst collecting in Greece. I do not find any record of its occurrence in Southern Russia or in Asia Minor; but Canon Tristram speaks of it (Ibis, 1865, p. 257) as being a summer visitant to Palestine, but very scarce and shy, and adds

that it was once or twice observed in the thickets near the Jordan, and once in the north near Shef Amar.

In North-east Africa it is common, and remains to breed. Mr. E. C. Taylor says that he found it very abundant all the way from Cairo to Assouan; and Captain Shelley writes (B. of Egypt, p. 198) that it is resident in Egypt, and is extremely abundant as far south as Thebes, beyond which place and in Nubia its numbers are much more limited. Von Heuglin met with it at Kordofan, and likewise records it from the Bogos country; and Dr. A. E. Brehm observed it at Sudan, where, however, it is rare. In North-west Africa it has been recorded from Algeria by Malherbe; and Mr. Taczanowski, who observed it there, writes as follows:—"It was observed singly on the coast between Philippeville and Bone in December. Like the Hen-Harrier, it is fond of flying over the fields, though usually at a greater altitude. It often perches on the tops of detached trees and on the telegraph-posts. In the interior I did not see a single individual during the season." Mr. O. Salvin writes (Ibis, 1859, p. 184) that he observed it on two occasions in the Atlas country, near where the Chemora empties itself into the Lake of Djendeli.

It was first described by Desfontaines from Barbary; and Mr. C. F. Tyrwhitt-Drake says (Ibis, 1867, p. 424) that he shot one at Tangier and a second at Tetuan. He saw a few others, and says that it breeds on the mountains west of Tetuan. Colonel Irby writes that, according to Favier, it is "scarce in the vicinity of Tangier, being seldom seen, and then in very limited numbers in February and March, and again during September and October. They are more common near Larache, where some are found breeding in April." Colonel Irby himself found it "common near Tetuan in April, as well as about Cape Negro; around Tangier at that time I only saw two." Dr. A. Reichenow states (J. f. O. 1873, p. 213) that it has been shot at Accra, on the Gold Coast; and Messrs. Shelley and Buckley also say (Ibis, 1872, p. 290) that they once observed it there. It has been recorded from the Gaboon and Gambia; and Mr. Andersson writes (B. of Damara Land, p. 20) as follows:—"This is a rare bird in Damara Land, and is only found about the estuaries of some of the large periodical watercourses; but it is not uncommon at Lake Ngami and its watersheds. It is invariably seen either singly or in pairs, and is usually difficult to approach on account of its watchful habits and from its perching on the tops of trees or lofty bushes. A pair observed in Ondonga were heard to whistle to each other as they flew from tree to tree." Mr. E. L. Layard, who met with it in South Africa, writes (B. of S. Africa, p. 27), "it is migratory, appearing about Capetown in the month of May. I have never heard of its nesting in this country. To a certain extent this species is gregarious. I counted nine roosting in one tree at Erste River, and several more were flying about close by. I fancy they had been attracted by an exodus of white ants, which had taken place that afternoon." Subsequently, however, to writing the above, Mr. Layard found it breeding at Berg River, where he obtained a number of its eggs, twelve of which he gave to me. Levaillant records it from Caffraria; and Mr. Ayres, who states that it is rare in Natal, adds (Ibis, 1859, p. 240) that "the Caffres assert that it chases Pigeons and catches them on the wing, This bird is frequently unsteady in its flight; and its appearance then much resembles that of a small Sea-Gull. It takes its prey (which consists principally of rats) much in the same way as *Tinnunculus rupicolus*, They are generally to be found in the open country, alighting on the tops of low trees scattered over the 'Veldt.'" Dr. J. Kirk states (Ibis, 1864, p. 316) that it is very common both on the

Shiré and Zambesi, and it was obtained at Zanzibar by Dr. Kirk, the late Captain R. M. Sperling, and Baron von der Decken.

Eastward it occurs as far as India. It is stated by Mr. A. O. Hume (Stray Feathers, i. p. 163) to be comparatively rare in Sindh, though plentiful enough in the Western Punjab, and he only met with it in Upper Sindh. Mr. R. M. Adam found it breeding near the Sambhur Lake; Dr. Jerdon writes (B. of India, i. p. 113) that it is found throughout India; Captain J. Hayes Lloyd obtained it at Togana, in Kattiawar, Western India; and Mr. A. Anderson says (P. Z. S. 1872, p. 80) that it is by no means common in the parts of India where he was, and, though a permanent resident, next to nothing is known of its nidification. He believes that it breeds in the Oudh Terai, as in April one year, when out tiger-shooting in that locality, he saw great numbers of them, and is almost certain he saw one fly off its nest. According to Dr. Hartlaub (J. f. O. 1854, p. 154) it has also occurred in Ceylon; but Mr. Holdsworth does not include it in his list of the birds found in that island.

In the Philippines, Celebes, Borneo, and Java it is replaced by *Elanus hypoleucos*, Gould, which differs in having the inner webs of the quills white towards the base; but the axillaries and under wing-coverts are white as in *E. cæruleus*. In Australia there are two species allied to the present one, viz.:—*E. axillaris*, Lath., which has the axillaries white, but on the under wing-coverts there is a large black patch, the greater series being dark ashy grey like the wing-lining; and *E. scriptus*, Gould, which has a broad black bar across the under wing-coverts, and has black axillaries. A fourth species (*E. leucurus*, Vieill.) inhabits the Southern States of North America and Central and South America. It resembles *E. axillaris*, but has the black patch on the under wing-coverts smaller, it being confined to the outermost greater coverts, the rest of the series being white, slightly tinged with grey. Judging also from my specimens, *E. leucurus* has a somewhat longer tail.

In its habits the present species is said to somewhat resemble the Harriers; and several naturalists, amongst whom I may quote the late Mr. S. Stafford Allen, speak of it as being, to some extent, crepuscular. It feeds on insects and small mammals, and is also said to prey on birds; but insects probably form its staple food. Captain Shelley writes (Ibis, 1870, p. 149), "it lives upon insects and mice, and I never observed any other food in the crops of four specimens which I examined. The flight is rather peculiar and varied; at Girgeh, where I first saw a pair playing together, they looked very like the common Gull. The shortness of the tail detracts, to my mind, much from the elegance of the bird's flight, and gives it an Owl-like appearance, which is somewhat strengthened by the hour at which I saw it on the wing, sometimes hovering over the water late in the evening while I have been watching for Ducks." Dr. Jerdon, writing on its habits in India, says (*l. c.*) that "it occurs most commonly in well-wooded cultivated districts, and in thin jungle, or in the skirts of the forests, avoiding alike bare plains and the depth of the jungles. It is not very much on the wing, nor does it soar to any height, but either watches for insects from its perch on a tree, or any elevated situation, or takes a short circuit over grain-fields, long grass or thin jungle, often hovering in the air like a Kestrel, and pounces down on its prey, which is chiefly insects, but also mice and rats, and probably young or feeble birds. I once shot one devouring the carcass of a Dove; but it appeared to have been dead for some time, and was probably not killed by the *Elanus*."

The Black-winged Kite has been found breeding in North Africa, South Africa, and in Western India. Dr. A. E. Brehm, who met with it breeding in North-east Africa, says (J. f. O. 1853, B, p. 94) that the nest is flat, large, and strong, very carefully built, and well lined with hair and roots. It is usually placed in the thick tops of lemon-trees or in the thorny 'nabak' bushes, seldom above 12 feet above the ground. The young are very carefully tended by their parents, who feed them almost exclusively on mice. They are fledged in about a month's time, and when caught are easily tamed. At Sudan, Dr. Brehm says, it breeds a couple of months earlier than it does in Egypt. Captain Shelley, who also met with it breeding in North-east Africa, writes (*l. c.*) as follows:—"We sought carefully for the nest of *Elanus cæruleus*, having often met with the birds in pairs remaining the whole day in certain rows of mimosa trees, which they would not leave; and at length we were rewarded; for on the 28th of March, having seen a bird flying along a row of these trees, we walked up to the spot and presently heard the cry of its mate, which we thus discovered sitting on its nest placed at the top of a young mimosa about 20 feet from the ground. The nest contained four eggs about the size of a Kestrel's, and varying considerably in colour, some being as dark as those of the Kestrel, while others show much of the white ground between the blotches. While we were blowing the eggs under the tree, the bird returned and sat in the nest repeating the cry which had at first called our attention to it. On the 30th of March, at Boash, we found another nest of this bird, situated on the end of a bough at the top of a high mimosa. Owing to the difficulty in reaching it, we unfortunately broke the four eggs it contained. They were hard sat-on, but in colour exactly resembled the nestful we brought back from Egypt." It has only lately been found breeding in India; and some excellent notes are published in 'Stray Feathers' (i. pp. 21–26) by Mr. Blewitt and Mr. Adam on its nidification. Mr. Blewitt, who found it breeding in the Sumbulpoor district, says that no doubt it breeds in all the tracts that are sparsely wooded and extensively cultivated with rice; and probably, as it is somewhat common in the Sambulpoor district, this may also be the case in the Raipoor district. He describes the nest as being circular, composed of small sticks and twigs, with the egg-cavity, about an inch deep, neatly lined with fine grass. The normal number of eggs he considers to be three. He took the eggs on the 20th December. Mr. Adam, who found it breeding at the village of Kuchrodda, about six miles south of the town of Sambhur, found the nest on the 7th August in a lasora tree (*Cordia myxa*), and describes it as follows:—"The nest was situated on the very top of the lasora tree, and was from 25 to 30 feet from the ground. In shape it was circular; and, with the exception of two or three pieces of sarpat grass (*Saccharum sara*), there was no attempt at lining. It was about ten inches in diameter; and the egg-cavity had a depression of about two inches. The twigs of which the nest was composed were of a uniform size throughout; and I could distinguish twigs from the following plants, which were growing close by, viz. jarberri (*Zizyphus nummularia*), bunna (*Edwardsia mollis*), khep (*Crotalaria burhia*), ihoghru (*Tephrosia purpurea*). All these twigs were very loosely and openly laced together." The eggs he describes as closely blotched with dark red on a creamy white ground and without gloss, thus closely resembling African-taken specimens in my collection. There is no doubt that the eggs of this species are almost invariably much blotched with colour, though some naturalists have erroneously described them as being white. I have a series of a dozen collected at Berg river, South Africa, by

Mr. E. L. Layard, which in general character most nearly resemble those of *Pernis apivorus*, or bright coloured eggs of *Nauclerus furcatus*, but are smaller in size. The ground-colour is whitish; but most specimens are so closely blotched with dark fox-red as to leave but little of the ground-colour visible. In some specimens the ground-colour is warm yellowish white, very closely clouded with rich ferruginous; in one egg, the ground-colour of which is white, one end is nearly unspotted, the other being closely blotched with rich, dark reddish brown. In size they measure from $1\frac{19}{40}$ by $1\frac{6}{40}$ to $1\frac{28}{40}$ by $1\frac{11}{40}$ inch.

The specimens figured and described are, an adult male collected near Alexandria by the late Mr. S. Stafford Allen, and a nestling obtained in South Africa by Mr. T. Atmore, both being in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Alexandria (*S. Stafford Allen*). *b*, ♂. Egypt, March 22nd, 1870 (*Captain G. E. Shelley*). *c*, ♂. Mataroëh, Cairo, April 29th, 1862, with nest and one egg (*J. H. Cochrane*). *d*, ♂. Tangier (*Colonel Irby*). *e*, *pull.* Potchefstroom, S. Africa (*T. Atmore*).

E Mus. Howard Saunders.

a, *ad.* Seville, April 1865.



